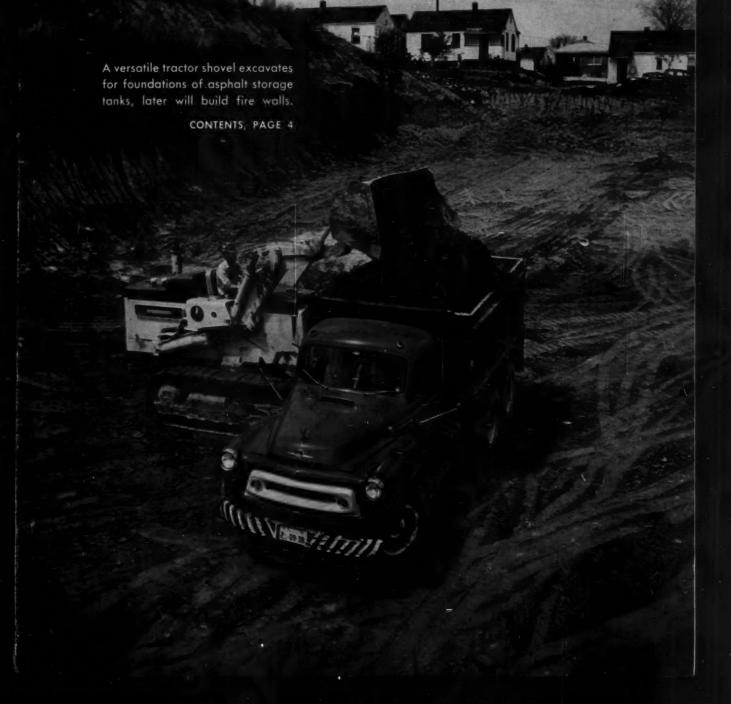
# Construction Methods AND EQUIPMENT

**APRIL, 1959** 

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Well, the Ready Mixed Convention at New Orleans is behind us—but pleasant memories stay abreast. "Abreast," now there's an appropriate word, for it brings to mind the Cat Girl at one of the better N.O. hot-spots. Never in all the Butler Engineer's sophisticated experience has there been anything like it. The bumps and grinds made exotically beautiful. Like a ballet. Salome was a piker. Such disciplined muscles . . . Such a disciplined Butler Engineer. (My wife was along.)

Speaking of wives, there were over 600 of 'em at the Convention. And over 2000 men.

Hundreds tore themselves away from the Cat Girl to inspect the dramatic new Jahncke Ready Mixed Plant. It's located practically downtown on a big piece of land near the river. Wonderful system of materials handling.

Only 4 men operate everything. It's fully automated, of course, and your Butler Engineer is delighted to say "every smitch of it is Butler equipment."

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Construction Methods AND EQUIPMENT

**APRIL. 1959** 

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**VOLUME 41** 



NUMBER 4

CONSTRUCTION METHODS AND EQUIPMENT, April, 1959. Established in 1019. Published monthly by McGraw-Hill Publishing Co., Inc., James H. McGraw (1860-1948) Founder.

Editorial, Executive, Circulation, and Advertising offices: McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer John J. Cooke, Secretary, Pablications Division: Nelson Bond, President; Shelton Fisher, Senior Vice President; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venesian, Vice President and Circulation Coordinator.

Subscriptions are selicited only from persons engaged in construction or in supply-ng the construction industry. Position and company connection must be indicated on abscripton orders.

United States subscription rate for individuals in the field of publication \$8 per ear, single copies \$1.00; foreign \$15 per year, payable in advance. Second classocause paid at New York, N. Y. Printed in U.S.A. Title registered in U.S. Patent fine. @Copyright 1959 by McGraw-Hill Publishing Co., Inc.—All rights Reserved.

SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager. CONSTRUCTION METHODS AND SQUIPMENT, 350 W, 34nd 81. New York 36, N. Y. Subscriber should notify publisher promptly of any change of address, giving old as well as new address, and including postal zero if any. If possible, enclose an address label frem a recent issue of the magazine. Please allow one mouth for change to become effective.

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#### Pay Dirt in This Issue



#### ON THE COVER

An expansion project at Delta Refining Co.'s South Memphis plant included excavation of 4,500 yd of loamy clay. So Collins Bros. Contracting Co., Memphis, brought in a Hough T-12 Payloader that did the earthmoving work in six 8-hr days. Here the crawler rig with 1¾-yd bucket loads an International truck with 11 yd in 5 min.

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#### NEXT MONTH

C. L. Guild Construction Co. is driving steel H-piles averaging 140 ft long in one piece on a power plant job near Boston. Spliced from shorter lengths in roller jigs that permit all-downhand welding, the long sections are handled by towering tubular leads on a large crawler crane. In all, there are 574 piles. Cramped Roadbuilder Solves His Space Problem 78

To build an underpass beneath an existing three-level New Orleans interchange, the contractor had to modify his equipment so that it could operate under the low ramps.



It's a Methods Showcase. 92 At this 204-ft gravity dam on the Savannah River in Georgia, the contractor is pouring mass concrete in 7½-ft lifts and cooling the aggregates with a steam vacuum process.

#### A Gamble on Gantries—Will It Pay? . . . . . . . 146

A daring contractor in Chicago takes a chance on two expensive gantry cranes to handle all materials that go into construction of four big settling basins at a filtration plant.







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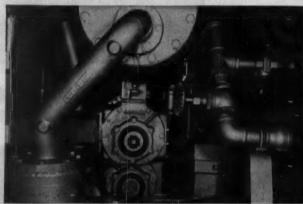
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Gardner-Denver RP900's on Glen Canyon diversion tunnel job provide trouble-free air for all phases of this major project.



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To maintain full day operator efficiency, Northwest engineers developed and pioneered the "Feather-Touch" Clutch Control. This device utilizes the power of the engine to throw the heavy Drum Clutches. Over the years the "Feather-Touch" Clutch Control has been refined and improved to a high point of efficiency.

point of efficiency.

Here, ease of operation is made possible by a simple, understandable, mechanical device—just a drum and brake band and the necessary linkage—nothing more. It is completely free of complicated and delicate mechanisms. There are no long lines of tubing, no pumps, no compressors or valves—nothing to fill! It is unaffected by weather or temperature and it requires no special knowledge or outside help for adjustment. The action of the clutch is in direct ratio to the movement of the operating lever and the operator does not have to maintain pressure on the operating lever to keep the clutch engaged. It is extremely sensitive and the true feel of the load is always present. Release is positive and straight manual control can be introduced at any time.

On a Northwest the operator knows where he is every second of his operating cycle. At once he has smooth, effortless control with freedom from the maintenance problems that come with complicated control devices. This means greater output and greater profit for the contractor. The "Feather-Touch" Clutch Control is pictured in detail in Northwest catalogs. We'll be glad to send you one on the size machine you need.

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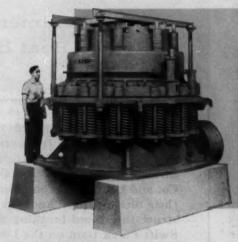
### produce big tonnages of quality construction materials at low cost per ton-

Illustrated here are typical examples of the vast contributions to the progress of mankind being made by the construction industry. Technological advancement in civil engineering of huge construction projects such as these call for rigid specification aggregates, crushed sand and cement. To meet the constantly growing demand for vast tonnages of these quality construction materials, Symons Cone Crushers have long been the first choice of leading producers throughout the world.

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Far left: To meet the challenge of the jet age, engineers and contractors are being called upon to build and expand airport runways to handle the ever-increasing traffic. (View shows Lambert Field. 8t. Louis).

Left: This view of one of the interchanges on the high speed Detroit expressway is a striking example of the contribution the construction industry is making to the treme-adous highway expansion program.

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## Jones-Tompkins complete world's highest earthfill dam

Allis-Chalmers Construction Machinery Helped Beat High-Speed Schedule

Sixteen million cubic yards of rock and fine conglomerate fill were piled 512 feet high to form the world's highest earthfill dam. J. A. Jones Construction Co. and Charles H. Tompkins combined their dirt-moving "know-how" to construct the record-breaking \$58,000,000 Swift Creek Dam on the Lewis River in Washington. Jones and Tompkins used

Allis-Chalmers torque converter crawler tractors and Allis-Chalmers motor graders for pioneering, spreading, compacting and grading. Bill Kennish, project superintendent, supplies the reasons why: "The Allis-Chalmers machines have proved themselves here where the going was really tough and the schedule even tougher."

The Swift Dam was a 30-month job—from turning the first earth to first delivery of power from its 204,000-kw generators. Electric power began to flow in December, 1958. The earth-moving operations finished 20% ahead of schedule.

The earthfill contract opera-

#### CONTRACTORS ON THE JOB:

Bechtel Corporation San Francisco California

J. A. Jones Construction Co., Inc. Charlotte North Carolina

Charles H. Tompkins Co.
Washington, D.C.

Jones - Tompkins Headquarters: Cougar, Washington



Bill Kennish, project superintendent Jones-Tompkins Construction Co.

tion, a joint venture by Jones-Tompkins, was worked to plans and specifications of the Bechtel Corporation, San Francisco, which holds the design and engineering contract with Pacific Power & Light Company.

Borrowing and hauling operations were handled by draglines, shovels and trucks... pioneering, spreading and compacting by a fleet of Allis-Chalmers torque converter crawler tractors. Much of the dozing was done on steep slopes of the dam and the surrounding terrain. Allis-Chalmers motor graders maintained the heavily used truck haul roads. Daily earth moving and spreading production averaged 48,000 cubic yards—often reached 60,000 cubic yards.

The dam is 512 feet high, with a crest length of 2,100 feet and a base thickness of 1,950 feet.

Bill Kennish, project superintendent, paid tribute to Allis-Chalmers machines for their

... move ahead with





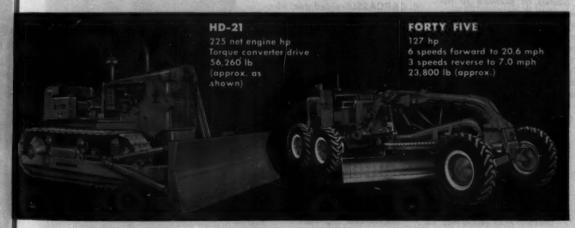
Jones and Tompkins used Allis-Chalmers torque converter crawler tractors to handle the tough dazing work on this, the world's highest earthfill.

"power, balance and especially trouble-free operation." He also commended his Allis-Chalmers dealer with the comment, "They have given us good service. We appreciate it. In remote locations like this, we simply cannot afford to gamble with equipment and service."

The excellent performance of Allis-Chalmers construction machinery, backed by outstanding Allis-Chalmers dealer service such as Jones-Tompkins has experienced, is yours, too. Your Allis-Chalmers dealer will recommend equipment. Arrange a demonstration... no obligation. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

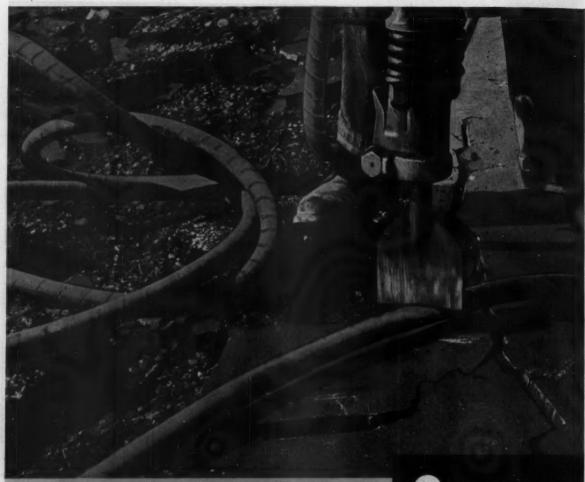


This Allis-Chalmers FORTY FIVE motor grader helped keep the Swift Creek Dam rising rapidly by keeping haul roads and fill in high-speed condition.





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#### Construction News From Washington

Washington, D.C. April, 1959

#### Depreciation Schedules—No Revision This Year

The Treasury Department has dropped its plan to revise its guide to the depreciation rates businessmen are allowed to take on their capital equipment. For three years, the Internal Revenue Service has been hearing from business tax experts about how to revise its "Bulletin F" published some 17 years ago.

The bulletin specifies, for all the major items of construction machinery, how a big tax deduction may be taken each year for depreciation. A grader with an 8-ft blade, for instance, can be written off in four years—25% a year; a pneumatic riveter in five years—20% a year.

Treasury officials admit the present rates of depreciation in Bulletin "F" are outmoded. Because they are outmoded, Treasury officials believe they've been successful over the years in getting revenue agents (who deal with the individual company or taxpayer) in departing from Bulletin "F" if the taxpayer can show that he wears out his equipment over a shorter time.

This is exactly what Treasury wants to happen. They are dropping plans to revise Bulletin "F" because they feel that agents would tend to regard the revised depreciation rates as standards to be followed closely.

So a revision, they say, might make it more difficult for businessmen to get the faster depreciation rates they now are getting through their own negotiations with revenue agents who know that Bulletin "F" is so old it can't be followed closely.

#### Little Chance for Hiring Rules Changes

Those Taft-Hartley Act amendments long sought by the AFL-CIO's construction unions appears to be going down the drain once again. The proposed changes—to permit pre-hire construction contracts and a seven-day union shop in the building industry—are in the center of a hot dispute over a labor reform bill.

Quick Congressional action on reform, taking the building trades amendments along with it, is snarled in debate. As a result, any T-H changes may lose out this session.

#### Industrial Construction Perks Up

American industry is planning larger expenditures for new plant and equipment this year. That's the latest encouraging news in what is shaping up as a highly favorable outlook for contractors.

The news comes from a survey conducted jointly by the Securities and Exchange Commission and the Department of Commerce. It shows that U.S. business plans to spend a total of \$31.8 billion this

year. That's a 4% increase over the 1958 total, but it's still 11% below the exceptionally high 1957 level.

Actually, the SEC and the Department of Commerce may be underestimating business plans for capital spending this year. Last fall, the McGraw-Hill Department of Economics reported that business planned capital expenditures of \$33 billion during 1959. And this report pointed out that actual expenditures could be substantially higher should the general economic recovery turn out to be faster than then expected.

#### New Housing Act Is a Sure Bet

Congressional leaders are determined to push through a housing bill this month. It will provide for increased construction in the fields of urban renewal, public housing, and college building.

The President is not likely to veto the housing bill this year. Congressional leaders feel, even though it will call for greater expenditures than he feels are wise or necessary over the next couple of years.

But whatever happens when the bill reaches the President's desk, some sort of new housing legislation in this session of Congress is almost a sure bet. A lot of Congressmen are saying they won't leave Washington until a new housing law is on the books.

#### TVA to Get Construction Funds

Construction of \$750 million of power plants by the Tennessee Valley Authority is certain to get a green light from this Congress. The House Public Works Committee has approved the legislation TVA needs—authority to issue its own bonds to finance construction of steam plants. There's little doubt that this legislation, which has been hanging fire for some time, will be approved by Pres. Eisenhower.

TVA officials told Congress that the \$750-million limit would permit them to add between 3.5 and 4-million kilowatts of new generating capacity. They predicted that TVA would use this up and come back to Congress in five years to seek an increase in its debt limit.

#### Airport Aid Looks Doubtful

It's doubtful now that Congress can write a bill providing federal aid for airport construction that will be acceptable to the White House.

The Senate's bill calls for \$465-million of federal aid over the next four years. The House bill trims the total to \$297 million, but it rejects the Administration philosophy that the federal government should gradually withdraw from the field.

The Administration wants to limit outlays to \$200 million, and the President is almost sure to veto a bill that proposes substantially larger expenditures.

#### 200 cubic yard-per-hour output of NOBLE job-site batching plant key to largest concrete construction contract

By providing up to 1000 cubic yards per day of quality concrete unobtainable from local sources, a NOBLE job-site batching plant was instrumental in securing the largest concrete job ever let in the Phoenix, Arizona, area - 60,000 cubic yards—for Job Concrete Construction Company, Pomona, California. With the NOBLE plant batching and discharging 4 cubic yards of cement and aggregates in 72 second cycles at the job site, only 10 transit-mix trucks, each hauling an average of 80 cubic yards per day, are required to supply all concrete for 2,000,000 square feet of slabs, gutters, sidewalks and foundations on the Luke Air Force Base housing project of 725 homes and for lining a 21/2 mile long flood control ditch. With recorder and other automatic controls to meet rigid Corps of Engineers specifications, the plant has a 4-compartment 150 ton capacity overhead aggregate bin and a separate 500 barrel capacity overhead cement silo. A second overhead cement silo can be added using the existing 350 barrel-per-hour vertical cement elevating screw.



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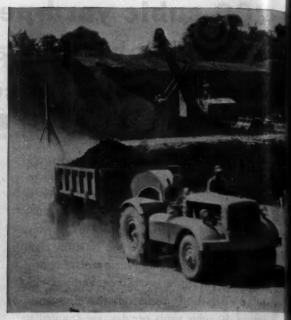
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The Texaco Simplified Lubrication Plan combines special and general-purpose lubricants to handle the greatest variety of equipment with the fewest possible lubricants.

Every Texaco Simplified Lubrication Plan is organized for a particular job. That way you get top performance from every piece of equipment, plus all the advantages of low lubricant inventory: fewer manhours spent in storage and handling, less paperwork in ordering, less chance for mistakes in application. A Texaco Lubrication Engineer will be glad to develop a Texaco Plan to meet your needs. Just call the nearest of the 2,000 Texaco Distributing Plants, or write:

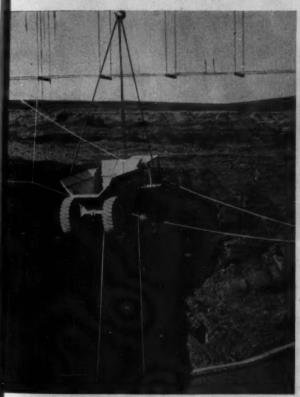
The Texas Company, 135 East 42nd Street, New York 17, N. Y.



3 SHOCK AND STRAIN won't break the tough film that Texaco Universal Gear Lubricant EP puts on differential and transmission gears. Universal Gear Lube is designed to take highly concentrated extreme pressure loadings.



4 HYDRAULIC SYSTEMS STAY CLEAN, give steady, powerful hydraulic action, with Texaco Regal Oil R&O. It's inhibited to prevent rust, minimize oxidation and foaming. Keeps air compressors on the job longer, too.



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MOISTURE CAN'T PENETRATE cables and wire ropes lubricated with Texaco Crater, because Crater lubricates all the way through, works itself between the strands to protect against rust, dirt and abrasion.



GRAWLER MECHANISMS LAST LONGER with Texaco Track Roll Lubricant. It insulates against moisture, cushions shock, minimizes ass wear.



LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)



INTERCHANGE NEARING COMPLETION. Note the efficient short haul of materials from batching plant, set up inside one circle of the clover-

leaf. Note variations in pavement width, flaring from 12' to 17' slab. Curves were super-elevated to maximum 16" in 16'.

## NEW TYPE JAEGER SPREADER SAVES \$400 TO \$450 A DAY ON U.S. 30 INTERCHANGE

Hydraulic self-widening and diagonal screed solve problems of placing flared and super-elevated slab

On this interchange of U. S. 30 East and State Route 1, near Mansfield, Ohio, V. N. Holderman Paving, Inc. set up for a daily production of 500 paver batches of 1.38 cu. vds.

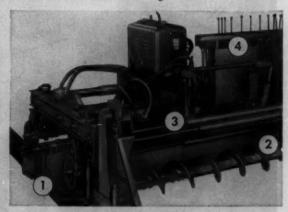
But, because slab width varied from 12' to 17' and curves were super-elevated to 16" in 16', it took 10 hour shifts to place this production, even with two finishing machines and a large crew.

SPREADER SAVES 2 HOURS: Introducing a new Jaeger JSX all-hydraulic self-widening spreader immediately behind the paver solved both problems. Width changes from 12' to 17' were made with the touch of a lever. On the super-elevated curves, concrete was easily spread up-hill by the Jaeger helical screw and the diagonally adjustable oscillating screed which makes a precision strike-off and also insures solid compaction against



the higher form. As a result, Holderman met the 500 batch schedule in 8 hours instead of 10, saving two hours (\$400 to \$450) daily overtime. They also saved 4 to 6 shovelers previously needed for carryback.

OFTEN SAVES SECOND FINISHER: On any work where specifications permit, use of the JSX spreader, with its accurate 12" oscillating screed, also eliminates the need for a second finishing machine.



#### 12'-18' JAEGER ALL-HYDRAULIC SELF-WIDENING SPREADER

1: ADJUSTABLE STRIKE-OFF, PLUS 12" OSCILLATING METERING SCREED DIAGONALLY ADJUSTABLE to lay up-hill on pitched and super-elevated slab.

2: INDEPENDENT RIGHT-AND-LEFT SPREADING SCREWS positively remix, spread, densify. No other spreader has them.

3: 6' OF INFINITE WIDTH ADJUSTABILITY by hydraulic power, operating telescopic frame and spreading screws. Simple screw flights and screed extensions with infinitely adjustable screed end-shoes.

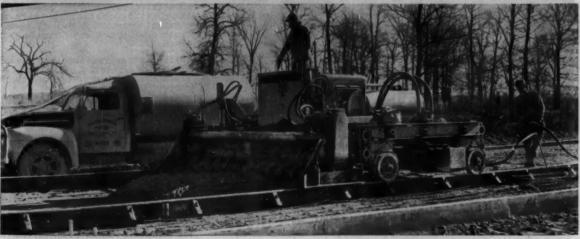
4: EVERY FUNCTION HYDRAULICALLY POWERED and lever controlled

Make money with a Jaeger JSX (diagonal screed) or JSH (transverse screed) spreader on your work. Ask your Jaeger distributor or send for Catalog JSP9.

#### THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

BELOW: Jeeger Type JSX spreading base course with dual screws. Adjustable plate makes rough strike-off for reinforcing mesh. On second pass, spreader lays top course, strikes it off, then makes precision metering strike-off with its oscillating 12" screed. Hydraulic power swings the screed to any angle needed to work material up-hill on pitched or super-elevated slab — eliminating carry-back.



#### ENGINEER'S FIELD REPORT

PRODUCT GEAR LUBRICANT
YAKIMA CEMENT PRODUCTS CO.
FIRM Yakima, Washington

#### No scoring or pitting of differential gears in 6 years



In Six Years of using RPM Multi-Service Gear Lubricant, not one differential in the entire 20-truck fleet of Yakima Cement Products Co. has shown any scoring or pitting of gear teeth. Despite grueling service delivering ready-mix concrete and other

building materials to off-highway construction sites, lubricant has never failed to do its job. Firm's six-wheel-drive trucks supply sand, gravel, ready-mix concrete, and fabricated concrete products to projects within 100 miles of Yakima, Washington.



Ready-Mix Truck like rest of firm's vehicles, is rebuilt Army surplus 2½-3 ton International. "In the fleet of 21 six-wheel-drive trucks, we have never had a transmission or differential failure due to lubrication, despite our severe operating conditions since

we started using RPM Multi-Service Gear Lubricant," says firm's chief mechanic, Art Weber. This lubricant is also used in all mixer drive gear boxes.



TRADEMARK "RPH DELO" AND

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20
THE CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey

#### Why RPM Multi-Service Gear Lubricant prevents wear



Special compound forms protective lubricating coating on gears by chemical reaction with metal...resists rubbing action of hypoid gear teeth.

Withstands extreme temperatures and pressures...highly oxidation resistant...keeps bearings and gears

•Inhibitors resist rusting, stop foaming...lubricates integral bearings...will not separate.

For More Information or field help with any fuel or lubrication problem, contact representative of any company listed or write direct.

STANDARD OIL COMPANY OF TEXAS, El Paso The California Company, Denver 1, Colorado

#### Job Talk ...

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#### Spindle Feeds Fabric Fast

Extra wide rolls of welded wire reinforcing fabric unwound from a job-built spindle cut handling time in half on a Canadian building project. For the \$5-million Imperial Tobacco Co. plant at Guelph, Ont., E.G.M. Cape Co. ordered more than 100 tons of welded wire fabric in 146-in-wide, 100-ft-long reels to reinforce the concrete floor slab.

Howard Allen, Hamilton, Ont., handled the actual placing of the fabric under a subcontract. Allen devised a spindle that revolves on a timber bracket to unwind the rolls. Five or six men can easily unravel a length of fabric long enough to cover a full bay in a matter of minutes. The crew placed an average of 18,000 sq ft of fabric a day.



#### Barge Shuttles Back and Forth in Trench

A job-built barge powered by two outboard motors—one at each end—is helping Mannix Co., Ltd., on a section of the 2,290-mile Trans-Canada Pipeline.

The pipeline runs across a

marsh. The trench fills with water as soon as it is dug out and becomes a canal. So Mannix decided to go in for some inland navigation.

continued on page 26

## LABYRINTH WATERSTOPS

A SOUND INVESTMENT FOR CONCRETE CONSTRUCTION!



LABYRINTH AVAILABLE IN 2, 3 or 4 rib.

#### ON YOUR CONSTRUCTION:

- 1. Consider the investment in design, materials and labor (to mention a few).
- 2. Then consider how important safe, secure watertight concrete joints are.
- 3. Thorough watertightness can be secured by installing Labyrinth Waterstops—a dividend that makes the low initial cost of the product insignificant when compared to your total investment—and one that insures watertight concrete joints for years!
  - Corrugated ribs grip concrete, insure an everlasting bond between joints.
  - Finest polyvinyl plastic resists chemical action, aging, severe weather.
  - Takes just seconds to nail to form ... easy to cut and splice on location (prefabricated fittings available).
  - There's a Water Seal product for every type of concrete work!

If your aim is to stop water seepage, stop it effectively with Water Seals' Water-stops!

#### "See Us in SWEET'S"

New Literature and Free Samples Sent on Request-Use Coupon Below

#### WATER SEALS, inc.

9 SOUTH CLINTON STREET, CHICAGO 6, ILL.

Made in Canada for J. E. Goodman Sales, Ltd.
Toronto, Ontario

WATER SEALS, INC. DEPT. 2
9 S. Clinton Street
Chicago 6, Illinois
Please send free sample and descriptive
literature.
Name
Company
Address
City.\_\_\_\_Zone\_\_State\_\_\_\_

## BIG PERFORMANCE

Hauling tremendous 230-ton transformers over soft roadways demands equipment capable of tremendous performance. Such performance is found in this new super Mack tractor recently purchased by Gerosa Haulage and Warehouse Corporation, New York.

Gerosa, noted for taking on the biggest, toughest and most unusual hauling jobs, for years has successfully teamed up with Macks . . . and found them equal to any job tackled. Mack transmissions, famous for built-in quality and stamina, stand up to the most demanding jobs. And for unsurpassed pulling power under the most adverse conditions there is nothing comparable to the Mack-built Balanced Bogie with exclusive Power Divider.

Big dramatic job—every-day bread-and-butter job... whenever it must be done efficiently, dependably, with the least downtime, there's a Mack that will best fill the bill.

See your Mack branch or distributor for all the facts on the most complete line of heavy-duty trucks available today. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

MACK FIRST NAME FOR TRUCKS



## EON THE BIG JOBS

230 tons of transformer for Consolidated Edison's new Staten Island, New York, power plant. A Mack LRVSW is handling the job.



Shown here crossing the Pakistan Desert, are I tric Transporters built by R. G. LeTourneau, I These, and machines like them, have penetr many of the world's roadless wilderness at Carrying 30 to 100 tons or more, these univehicles use the tremendous power and traction Electric Wheels to carry payloads up 30% motain grades, over soft desert sand and gum



OVER ROUGH MOUNTAIN.

DESERT AND JUNGLE TRAILS

ELECTRIC ARCH skids 30 tons of logs from rugged timber areas. Coming downgrade, regenerative electric braking holds Arch and 30 tons of logs safely, surely at selected speed. Brakes have no wearing parts.



ERECTOR picks up, transports and places Corporal Guided Missile at launching site. All movements are powered and controlled by standardized, trouble-free electric components built by R. G. LeTourneau, Inc.



AIRCRAFT TOW TRACTOR pulls 250 plane on glare ice. Electric Wheels "soft" starts, permitted by infinite a of power control from zero to full special "ice gripper" for slick sur



5-year performance on every continent proves out Electric Drive by R. G. LeTourneau. Inc.

The Electric Wheel, a highly-advanced drive system manufactured by R. G. LeTourneau, Inc., is now in use on every continent – in opposite extremes of climate, and in widely varied industries. Machines equipped with Electric Drive have fully demonstrated their superiority in getting more work done, faster, and at lower costs than can be accomplished by machines with conventional drive.

Simplicity, ruggedness and tremendous power are what you get with the Electric Wheel system. The Electric Wheel itself has a DC electric gearmotor mounted in the hub, powered by a self-contained diesel-electric generating system. Every wheel is a driving wheel. Power is automatically and instantly transmitted to the wheels with best traction; transmissions, driveshafts and differentials are completely eliminated.

Extensive development of the Electric Wheel system has

Extensive development of the Electric Wheel system has created a complete family of integrated, efficient and trouble-free components – all of which we make ourselves. This includes the generators, electric motors, switch gear, gear reduction – in fact we even make the steel. The result is unusual dependability and performance.

NOW IN EARTHMOVING

Electric Drive earthmoving machines offer great, new productivity. One of several new types available is shown below. See them now for your next BIG jobs in construction and mining. For information please call or write 2395 South MacArthur, Longview, Texas.

de mud. Huge, low-pressure tires for high tion... all-wheel drive... electric brakes that it wear out, are some of the features that make Transporter a successful cargo hauler where ventional machines have failed. These are feasyou can now get in earthmoving machines, t for the BIG construction and mining jobs. or write for more information.

#### R.G. ETOURNEAU INC



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urneau, le penetra rness an hese uni d traction

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and gur

CRUSHER adapts powerful Electric to rollers. Tremendous traction al-Crusher to clear 2 to 4 acres of forest our. Trees and underbrush are comy flattened for quick site preparation.



ELECTRIC FURNACE STEEL is made and rolled in our own mill for high quality, availability and production economies. We also make all components... including electric motors... used in machines shown here.



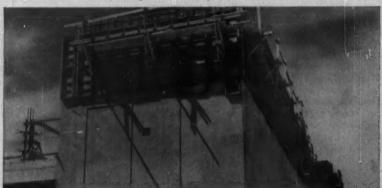
NEW EARTHMOVING EQUIPMENT. L-50-Ton Digging Scraper has all-wheel Electric Drive...electric controls...self-loads 50 tons in double buckets. Write for details on BIG equipment in new earthmoving line.

#### WATER and SEWAGE PLANTS

#### **Constructed with Symons Forms**



Sewage Plant... Two digestors and two filter tanks with wall heights from 8 to 23 feet formed with 12,000 square feet of Symons Forms.

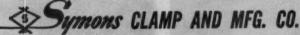


60' High Sin Section . . . 8,500 square feet of Symons Forms were used on walls, slabs and stairways of sewage treatment plant.



10 Million Gellon Reservelr . . . Continuous pours of 50 ft. sections in heights up to 18 ft. Concrete was placed through pouring pockets.

Use of Symons Forms is not confined to one type of job. They can be used efficiently for almost any type of construction and on any height of wall. Symons Forms, Shores and Column Clamps may be rented with purchase option—rentals to apply on purchase price. Information on Symons products and services sent FREE on request.



**4255 Diversey Avenue** 

Dept. D-9

Chicago 39, Illinois

MORE SAVINGS FROM SYMONS

JOB TALK...
continued from page 21

The barge carries 5-ton concrete weights that hold down the pipe in the water-filled trench. Made of ¼-in. steel plate, the barge is 14-ft long, 6-ft wide, and 3-ft deep. Its empty weight is about 6,000 lb.

A Bucyrus-Erie 22-B crane fitted with swamp pads loads the weight into the hold of the all-welded barge. A pipe pug welded to the bottom of the hold centers the weight and holds it there. Low in the water, the barge moves up the canal to where another 22-B picks up the weight and places it in the water-filled trench.

The barge is powered by two Mercury outboard engines. A 25-hp engine pushes the barge when it is loaded; the other engine is a 10-hp model that powers the barge on the return trip when it is empty. There is not enough room in the narrow ditch to turn the barge around.



#### **Tractor Erects Panels**

An International 350 Utility tractor equipped with a Kirkhoff high reach fork lift handles erection of prefabricated wall units on a two-story school building in Joliet, Ill.

Illinois Mason Contractors, Inc., of Wheaton, Ill., use the versatile rig for moving precast mullions and wall panels from stockpiles to the spot where they are needed at the building site. The fork lift attachment then raises the units into place.

Rated at 4,200 lb. at an 18-in. load center, the fork lift handles the 5x7-ft, 2-in.-thick panels, each weighing 1,700 lb, with no difficulty. Maximum reach of the rig is 21½ ft. A single rig can place 15 to 20 panels a day.



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4900 S. Austin Ave. Chicago 38, Illinois POrtsmouth 7-4212 7701 Interbay Blvd. Tampa 9, Florida TAmpa 61-1881 315 W. 25th St. Houston 8, Texas UNderwood 4-7774

New Jersey OAkwood 7-2100

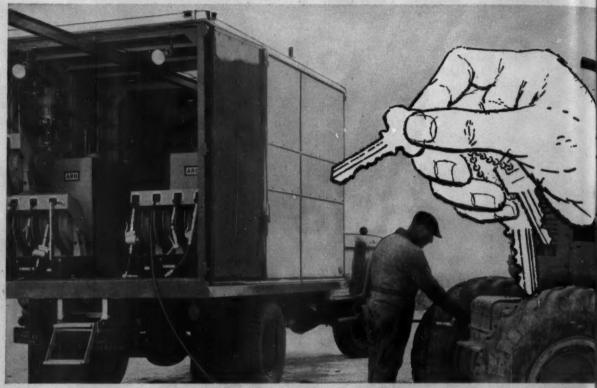
Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. Crothers Limited, Toronto, Ontario

Brazilian Representative: Geo. W. Crotners Limited, Foronto, Order Brazilian Representative: Oscar Taves & Co., Ltd., Rio de Janeiro

#### Beat high cost of Downtime!

## NEWARO CUSTOM-BUILT



#### PROPER LUBRICATION WITH ARO LUBE-VAN PAYS FOR ITSELF!

- Best protection for heavy equipment—which
  may be an investment of several million
  dollars on one spread.
- 2 Better control of equipment maintenance costs
  —estimated at 20% of total highway
  dollar.
- 3 Prevents castly downtime. Lest production time on thirty yard scraper can cost \$75 to \$100 per hour. Breakdown of key piece of equipment shutting down other equipment can cost as much as \$1000 per hour in lost production.
- 4 Lubrication cost is small. The lubricants plus handling, storing and dispensing represents less than 1% of total highway dollar. Similar small percent on other heavy construction.

#### **Keys to Proper Lubrication**

Product Quality \* Application Information Simplified Lubrication Field Engineering Service Adequate, Prompt Delivery Service



Service units are self-powered by air compressor and generator shown here. This gives you around-the-clock lube service anywhere—with an ARO Lube-Vani



Air hoist with trolley simplifies leading. All units installed for most efficient operation . . . engine oils, geur, chassis, track, hydraulic, all, water, subsent.

## LUBE-WAN

A TURN-KEY JOB!

Factory-Built By Lube Equipment Engineers To Your Specs... Tested and Delivered To Your Site Ready To Roll!

Another ARO first! You've got to keep bearings, engines and precision surfaces lubricated—to keep your big rigs rolling and your downtime down! This calls for a custom-engineered mobile lube unit to give you on-the-job lubrication when you need it, where you need it . . . 24 hours a day!

Now ARO Engineers have solved this problem for you—after more than two years of studying your needs on hundreds of construction sites—coupled with development work, field-testing and proving by ARO's staff of lube engineering specialists.

This new concept is a far cry from makeshift methods. Here's what ARO offers—

Engineering . . . Custom Service for every con-

tractor requirement. An Aro Field Engineer works closely with you to coordinate your needs with Oil Company recommendations. ARO will submit planned drawings of proposed Lube-Van... make sure of correct weight distribution... recommend truck and van specifications.

**Equipment . . .** The ARO Lube-Van is self-powered. All pumps and reels are heavy-duty all-weather type—specialized for contractor needs. A completely engineered unit for fast, safe, clean lube service. Speeds up lubrication! Each Lube-Van factory-tested with actual products before delivery. Reaches site ready to go—a turn-key job!

SALES AND SERVICE by qualified ARO Field Personnel and facilities in all territories.



#### **LUBE RIGS, LUBE VANS for All Contractor Needs!**

ARO offers a wide range of Lube Rigs and Lube Vans which provide all services normally required for earth-moving and construction equipment lubrication. ARO Model 649-051 Lube Rig at left is widely used by large contractors. It is self-sufficient and ready for work anywhere—on a flat bed truck or at your maintenance area.



#### WRITE TODAY!

Send for new catalog showing ARO's complete line of Heavy Duty Lubricating Equipment for Contractors.

#### THE ARO EQUIPMENT CORPORATION, Bryan, Ohio

Aro of Calif., 3141 S. Grand Ave., Los Angeles 7, Calif. Aro Equipment of Canada, Ltd., Toronto 15, Ontario Offices in All Principal Cities



LUBE EQUIPMENT

April 1959 - CONSTRUCTION METHODS and Equipment - Page 29

Pick a pickup that's

# ruck

Chevy's got 'em by the dozen!

The handiest helper you'll ever have is right here one of these '59 Chevrolet pickups is bound to be just right for your work. It's ready to hop-to-it on your hurry-up chores with the power, the load capacity and the tough components that spell savings in time and money every run. Pick your pickup; then read all about it here:

#### Save up to 20% on fuel!

Choose any one of Chevy's 5 dashing Fleetside models or 7 handy Stepside models and you can count on extra savings right from the start. Each of these models offers the newly improved Thriftmaster 6 as standard equipment. With a new Economy-Contoured Camshaft, this engine assures up to 10% less fuel consumption. And in Series 31 and 32, the Thriftmaster can be equipped with a new Maximum-Economy Option\* that improves economy by an additional 10%! Or if you prefer a V8 engine, 2-wheel-drive models offer the power-packed performance and short-stroke efficiency of the advanced 160-h.p. Trademaster V8\*.

#### Carry extra-big cargoes

There's room for everything in a '59 Chevy pickup

body! Smooth-lined Fleetside models provide big cargo areas in lengths of 78" or 98" and all are a full 6 feet in width. New Stepside models, with handy side running board, offer spacious bodies in 78", 98" and 108" lengths. And each of these new pickups comes equipped with ruggedly built graintight tailgate and long-lasting select-wood floor with steel skid strips.

#### Haul anywhere with Chevy's new 4-wheel drive

It's the latest thing in 4-wheel drives, now available in either Fleetside or Stepside pickup models. With 2-speed power divider and precision-engineered front axle, it gives nearly twice the torque multiplication and up to twice the traction of 2-wheel drives. Powerful traction that digs right in and enables you to haul where you couldn't before-through deep mud, snow, swampy areas and up towering grades!

Light loads, big loads, long runs, short hops-whatever you haul and wherever you haul it, you're sure to find the right truck for your business in Chevy's long, strong and handsome line of pickups! The one for you is at your Chevrolet dealer's now. . . . Chevrolet Division

of General Motors, Detroit 2, Michigan.

No job's too tough for a



MODEL 3104



MODEL 3154 (4-Wheel Drive)





MODEL 3184 (4 Wheel Drive)



MODEL 3204





MODEL 3654 (4-Wheel Drive)

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**MODEL 3634** 



MODEL 3684 (4 Wheel Drive)



MODEL 3804



MODEL 3854 (4-Wheel Drive)

... AND EL CAMINO, TOO!



Chevrolet Truck! CHEVROLET

April 1959 - CONSTRUCTION METHODS and Equipment - Page 31



#### "We improved our masonry mortars by switching to Atlas Masonry Cement"



Projects Barwise Junior High School, Wichita Faile, Texas. Architects: Jeses G. Dixon, Arch., R. B. Pardue, Asso., Wichita Faile, Texas. General Contractors
W. C. Shelton, Lawton, Okla. Masenry Contractors W. P. Howle, Wichita Faile, Texas. Design Stephens Lumber Co., Wichita Faile, Texas.

"We cut our teeth on a portland cement and lime mortar," says

W. P. Howle, masonry contractor of Wichita Falls, Texas. "We were hard
to convince that any other mortar could compare. Until some
six years ago, that is. Then we tried Atlas Masonry Cement in mortar
for a small commercial building. We've been using it ever since."

Here are the reasons why contractors are switching to Atlas Masonry Cement: It produces a smooth, easy-working mortar that "butters" easily, stays workable, assures a stronger bond. It requires less mixing water, minimizing shrinkage and cracking. Also provides uniform color in the mortar joints. Complies with ASTM and Federal Specifications.

For your copy of "Build Better Masonry," write Universal Atlas, 100 Park Avenue, New York 17, N. Y.

"USS" and "Atlas" are registered trademarks

M-74



Universal Atlas Cement Division of United States Steel

OFFICES: Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee · Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco

To handle BIG JOBS profitably you need:

# BIG SCRAPERS BIG PUSHERS BIG GRADERS

ONLY from LeTourneau-Westinghouse can you get all three



#### Here's how L-W "BIG ONES" measure up...

CAPACITY...

SPEED...

DEPENDABILITY...

B Tournapull\* with Fullpak\* scraper

#### "--Fastest loading"

28 YDS HEAPED... and two years of loadweight tests prove B 'Pulls' consistently load a greater percentage of capacity than any other scraper. Fullpak's low, wide bowl, deep-bellied apron and arched tailgate "boil" the dirt for faster heaps, fewer voids, more pay-yards every load.

let

4-w

typ

#### INSTANT-RESPONSE

ELECTRICITY controls bowl lift, tailgate, and apron. For high-speed maneuverability, you have electric kingpin-steer. With either torque-converter or 10-speed step-gear transmission, you work or travel at fastest practical speed. And this 335-hp machine travels at over 30 mph!

#### EXCLUSIVE L-W POWER-

TO A MORTER THEFT DESCRIPTION

and "duckwalk" ability keeps you working at normal speeds in soft going. Downtime is reduced, because electric-control system eliminates most "trouble-maker" parts. All components are easy to reach. Tournapull simplicity saves you money.

Ask for a demonstration!





Twin-C\* Push-Tractor L-W 660 Motor grader

"--Fastest pushing"

"--Fastest working"

436 HP, 40-TON WORK-WEIGHT let Twin-C push-load today's biggest scrapers fast. 4-wheel drive on 7'-high, 2½'-wide tires, with L-W power-transfer differentials, provide the needed flotation and traction to work steadily in all types of materials.

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astad. MORE BLADE WORK...FASTER
... than any other grader, of any size, at any
price... proven by owners everywhere! Biggest of
L-W's 7 sizes of Adams\* graders, 660 POWERFlow® is nearly 14 tons of grader applying 190
hp to your work through a torque converter. Rugged 160-hp "stick shift" 660 also available.

PUSH-LOAD FASTER with non-stop shift ... kingpin-steer for faster maneuvering and positioning ... 20-mph speed. With synchronized torque converters, constant-mesh transmissions, Twin-C matches scraper speeds better, gives scrapers a fast-speed shift-saving boost out of cut.

WORK AT FASTEST POSSIBLE SPEED AUTOMATICALLY... with torque converter plus tail-shaft governor on 660 POWER-Flow. Speeds to 27.4 mph! Positive blade control through BIG 63" circle, Blade movement is fast... you go from deep ditch-cut position to high bank-cut in less than a minute!

JOB-PROYEN RUGGEDNESS: Twin-C's two transmissions, two torque converters, two differentials, and other assemblies, are standard L-W components proven on thousands of earthmoving jobs all over the world. Twin-C is built big and strong to handle heavy work. Entire unit is a heavy-duty "reserve strength" machine.

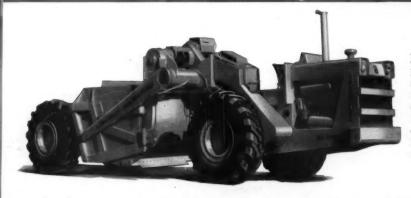
Get full details now!

ALL WELL-KNOWN ADAMS

STRENGTH FEATURES are standard on the "660's": continuous-welded one-piece frame, full-floating rear axle, welded bar-and-plate front axle, anti-friction bearings on all gears and shafts, life-time lubricated universal joints, and rubbermounted engine.

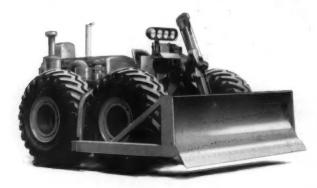
See one in action!

# ...the "before and after" tool



D TOURNAPULL® with 9-yd 3pacity saves you money on smaller-yard ge scraper work around your job. It builds hall roads ... prepares cuts and fills ... she .!ders and backfills . . . stockpiles topsoil . . and handles miscellaneous clean-up work on even the biggest projects. "D" has 138 by, 29.5-mph speed, electric controls, and is as rugged as any scraper.

## ... rubber-tired specialist on ANY



TOURNATRACTOR®, 218-hp tractor-on-rubber belongs on any dirtmoving project . . . because it is completely mobile. With 17.2-mph speed, it has both working and moving speed to handle any tractor jobs that pop up on big work-areas. Use it for pulling compactors . . . it supplements your rollers with 20 tons of its own weight concentrated on its 4 big 2'-wide tires. Torqueconverter, constant-mesh transmission helps it doze fast. Tournatractor will earn money on any standard tractor assignment.

Litho in U.S.A.

LA-2108-DC-4

# add an equipment expert as a "partner"

Job-in and job-out, your L-W Distributor can be your biggest profit booster. He will serve you as a non-sal-aried partner... who's an expert on equipment problems. Remember: while you are handling only a few contracts a year, he is associated in some way with dozens of earthmoving jobs.

Put his experience and know-how to work for you, Call him in before you prepare your bids. Get his suggestions on how you can handle the job at lowest cost. Let him analyze your fleet, to help determine which rigs can still earn their keep . . . which ones need overhauling or reconditioning . . . and which, if any, you should trade in on new machines to protect your profit margin.

Your L-W Distributor can be a big help, too, in planning an efficient maintenance setup. He'll check over your parts and replacement stocks, and help arrange a schedule so his service department and yours can work together with greatest efficiency.

Next opportunity, visit your L-W Distributor. You'll find him and his staff interested in helping you in all phases of your business... from production problems, to machinery selections, to financing.

#### LETOURNEAU-WESTINGHOUSE COMPANY

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company Where quality is a habit





# HERE'S WHAT DOES IT!

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DIGEST OF PERFORMANCE FIGURES FOR 1296 BELTS\*

44% increase in consistency of tensile strength

6% increase in tensile strength

130% improvement in consistency of elongation

\* Compared to belts previously manufactured

The startling figures above are a direct result of two major belt manufacturing advancements — both developed by, and exclusive with, Boston Woven Hose & Rubber Co.

ADVANCEMENT #1 BALANCED BELT CONSTRUCTION for the first time equalizes ply stress so that each ply pulls its full share of the load. BBC eliminates lazy plies. A BOSTON exclusive because only BOSTON can combine Electronic Tension Controls with Rotocure, the continuous method of vulcanization, which assures uniformity throughout the belt.

ADVANCEMENT #2 DULON markedly improves the aging characteristics of BOSTON belts. An exclusive BOSTON research development, the tough specially treated cover compound stays resilient longer... makes the belt much more resistant to abrasion, gouging, tearing and oxidation.

BALANCED BELT CONSTRUCTION plus DULON add up to longer belt life . . . less trouble in service . . . greater economy.

BOSTON

BOSTON WOVEN HOSE & RUBBER COMPANY DIV. OF AMERICAN BILTRITE RUBBER CO., INC. BOSTON 3. MASS.

(I)\_ (

INDUSTRIAL HOSE











PACKING

MATTING

TAPE

# ORDER'EM NOW GET'EM NOW!



# INTERNATIONAL TRUCKS

WORLD'S MOST COMPLETE LINE



International Harvester Company, Chico Motor Trucks • Crawler Tractors Construction Equipment • McCormick® Farm Equipment and Farmall® Tractor Fra

# Choose from these heavy-duty INTERNATIONAL dump truck models... with standardized equipment...to be shipped within 24 hours of order!

No waiting! If you call your International Dealer now he'll place your order immediately with International's Truck Sales Processing Center. Within 24 hours your truck can be shipped from this factory inventory pool ready to roll under the shovel.

Choose from International Truck conventional or compact-design models equipped with bodies, hoists,

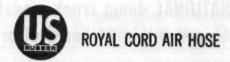
frame reinforcements, tow hooks, double-faced front directional signals, rear view mirrors both sides, heaterdefrosters and oil filter.

Your choice of optional body equipment including cab protectors, extension sides, swinging partitions and spreader aprons as ordered will be installed at factory inventory pool in a matter of hours!

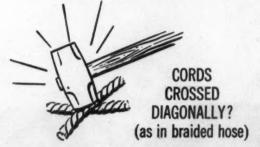


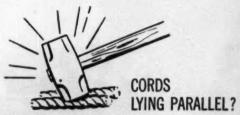
#### A full range of models to meet your exact need!

	S	ingle Rear Ax	Tandem Rear Axle		
Model Series	164	182	184	182	192
Gross Vehicle Rating	19,000	21,000	23,500	33,000	38,000
Body	4 Yd.	4 Yd.	4 Yd.	8 Yd.	8-10-Yd.
Wheelbase	129 in.	141 in.	141 in.	149 in.	157 in.
Engine	264 cu. in.	308 cu. in.	308 cu. in.	308 cu. in.	450 cu. in.
Transmission	4-speed Synchro-mesh	5-speed Direct	5-speed Direct	5-speed Direct, 3-speed Auxiliary	5-speed Direct, 3-speed Auxiliary
Rear Axle and Capacity	15,000 2-speed	16,000 2-speed	18,500 2-speed	28,000 single- reduction tandem	34,000 single- reduction tandem
Tires	8.25 x 20 10 ply	9.00 x 20 10 ply	10.00 x 20 12 ply	9.00 x 20 10 ply	9.00 x 20 10 ply
Frame Reinforcements	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"	Inverted "L"
Heavy Duty Springs	Yes	Yes	Yes	Std.	Std.



# WHICH HOSE CONSTRUCTION CAN TAKE THE BEATING?







### as in U.S. Royal Cord Air Hose?

Yes, the exclusive "U. S." development—parallel cords cushioned in rubber can take and do take the most pounding. Observe how the cords run parallel in each of the two pressure-resisting plies; there is no crossing as in conventional braided hose. Each ply is separated by a layer of rubber—each cord is cushioned in rubber. This means there can be no friction created between cords, and therefore no chance of any shearing within the carcass.\*

of incition created between cords, and therefore no chance of any shearing within the carcass.\*

A hose with spiral plies is always stronger, because more strands can be used throughout the entire hose length than can be used in other constructions. U. S. Royal Cord Air Hose has the same construction as that of a tire. This is the exclusive quality you find under its cover.

The exclusive and outstanding features you get in U.S. Royal Cord Air Hose constitute one of the main reasons why



U. S. Rubber is the largest manufacturer of the widest range of industrial rubber products serving industry.

When you think of rubber, think of your "U. S." Distributed He's your best on-the-spot source of technical aid, quid delivery and quality industrial rubber products.

\*This same exclusive cord construction is also built into "U.S." water, steadock and fire hose.



Mechanical Goods Division

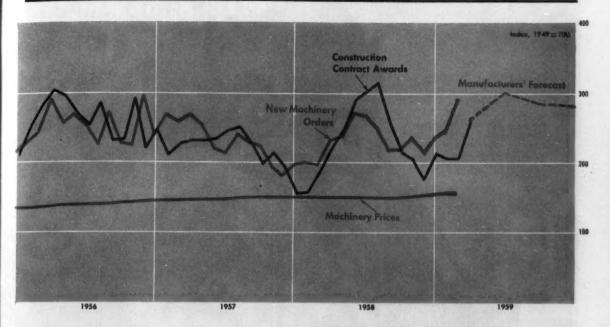
# **United States Rubber**

WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

Rockefeller Center, New York 20, N.Y.

In Canada: Dominion Rubber Company, Ltd.

## Trends in the Machinery Market



#### **Price Index**

	FEB 1959	MONTH	YEAR AGO	% CHANGE 1958-1959
All Types of Equipment	171.3	170.9*	165.6	+ 3.4
Cranes; Draglines, Shevels Shovel, ½ cu yd Shovel, ¾ cu yd Shovel, 1-1½ cu yd	156.2 173.3	168.3 156.2 173.3 183.7	163.0 153.7 167.4 174.3	+ 3.4 + 1.6 + 3.5 + 5.4
Shovel, 2-2½ cu yd Shovel, 3-3½ cu yd Shovel, 6 cu yd	158.8 165.2 186.4	158.8 165.2 184.1	154.4 162.7 179.5	+ 2.8 + 1.5 + 3.8
Crane, truck mounted Crane, tractor mounted Bucket, clam shell Bucket, dragline	135.1 157.5	168.8 135.1 157.5 189.7	164.2 135.2 152.7 180.8	+ 3.2 - 0.1 + 3.1 + 4.9
Scrapers and Graders Scraper, 4 Wheel, 8-10.5 cu yd Scraper, 4 Wheel, 12-15 cu yd Scraper, 2 Wheel, 14-18 cu yd (a) Grader, heavy duty	155.0 156.8 123.7 171.1	163.8° 155.0 156.8° 123.7 171.1	158.8 155.0 151.3 122.7 164.0	+ 3.1 0 + 3.1 + 0.8 + 4.3
Grader, light & medium	166.1	166.1	161.2	+ 3.0
Tracters (non-farm, Incl Industrial)	128.2 191.9 196.4 191.3	187.8 128.2 191.9 196.4 191.3	181.0 128.4 182.6 185.8 186.7	+ 3.8 - 0.2 + 5.1 + 5.7 + 2.5 + 5.0
Machinery, Tractor Mounted Dozer, cable controlled Dozer, hydraulic controlled Cable power control unit Loader, shovel type	168.6 154.4 186.6 151.4	201.3 188.4 154.4 186.6 151.4 161.0	191.8 161.7 151.6 177.3 147.9 153.9	+ 5.0 + 4.3 + 1.8 + 5.2 + 2.4 + 4.9
Specialized Machinery  Ditcher Roller, tandem Roller, 3 wheel Ripper and rooter	153.2 156.6 198.6 170.2	153.2 156.6 198.6 170.2 150.5	150.2 154.1 193.2 161.6 143.3	+ 2.0 + 1.6 + 2.8 + 5.3 + 5.0
Dewatering pump, 10 M gph Dewatering pump, 90 M gph	145.7	145.7	111.7	+ 0.3
Portable Air Compressors	159.5	159.5	159.1	+ 0.3
Contractor's Air Tools		181.6*	164.3	+10.5
Mixers, Pavers, Spreaders Mixer, portable, 11 cu ft Mixer, portable, 16 cu ft Mixer, truck, 6 cu yd Mixer, paving, 34 cu ft	164.1 168.6 131.1 189.2	155.4* 164.1 168.6 131.1* 189.2*	149.3 160.1 163.7 128.1 185.2	+ 4.1 + 2.5 + 3.0 + 2.3 + 2.2
Concrete finisher & spreader Bituminous distributor Bituminous spreader Bituminous payer	122.3 170.7 155.8	183.5 122.3 170.2 155.8	173.0 122.4 160.3 153.0	+10.7 - 0.1 + 6.5 + 1.8
Off-Highway Trucks, Wagons (b)	101.1	101.1 101.1 101.4	100.0 100.0 100.0	# 111

a January, 1955—100
 b January, 1958—100
 Revised
 BLS Primary Market Price Indexes, U.S. Department of Labor, 1947-49—100

# Prices Steady At Record High

Manufacturers' list prices of construction equipment held steady in February, except for a few items. The Bureau of Labor Statistics reports its over-all price index hit a record 171.3 on February 15, based on average prices in 1947-49 as 100. This was 0.2% above the revised January value of 170.9, but 3.4% higher than a year ago.

Substantial price hikes for concrete finishing and spreading equipment helped pushed the index into higher ground. This type of equipment was up 4.4% in February. Slight increases of 0.2% to 0.3% were reported for 6-yd power shovels, truck mounted cranes, tractor-mounted loader attachments, and bituminous spreaders.

#### **Equipment Sales May Set Record**

Construction equipment makers expect new orders this year to top 1958 by 21% and set a new high in dollar value, according to the McGraw-Hill Economics Department.

The monthly New Orders Index is forecast to average 286 this year, based on 1949=100. This tops 1956's previous high by 13%.

If February orders are a sample of contractors' equipment buying during the rest of 1959, the new forecast is a safe one. The New Orders Index shot up to 298 in February, nearly matching the high for the month set in 1951 and a thumping 49% jump over the low order volume in February, 1958.

Heavy construction contractors' new business soared in March. The Contract Awards Index climbed to 262, highest since last July and 17% above a year ago. Awards for the first three months of this year are up 20% over the relatively low volume of 1958.



Only M-F Work Bulls with Davis-engineered loaders, backhoes, and other attachments fill the bill for light industrial equipment with proven quality and customer acceptance.

They are specially designed for industrial use with many features found only in bigger, more expensive equipment.

The same machine and the same operator can do scores of jobs - trenching, backfilling, loading, clearing, lifting, material handling, or cleaning up - to keep your job rolling and your profits multiplying.

Because M-F rigs depend upon speed, maneuverability, and proper application of power instead of brute force and single-load capacity, they work circles around—and replace—costly, single-purpose machines in many cases.

Your Massey-Ferguson Industrial Dealer can help you select just the right power package for your operation—and he'll back it up with service. Write today for free literature and his name and address.





Moré Sull 1081 Work Sull 200 with 500 Loader and Davis Backhae Work Sull 202 with Davis Loader and Backhae Work Sull Folk L

MASSEY-FERGUSON INDUSTRIAL DIVISION

1009 SOUTH WEST STREET . WICHITA 13N, KANSAS

# PRECAST CONCRETE

MADE WITH

# Lehigh Early Strength Cement

FOR MODERN FIRESAFE SCHOOL

Walter Hines Page Senior High School, Greensboro, N. C.

Architect: McMinn, Norfleet & Wicker, Greensboro, N. C.

General Contractor: Brooks Lumber Co., Greensboro, N. C.

Contractor for Precast Units: Arnold Stone Co., Greensboro, N. C.



Concrete filler block laid between precast joists ready to receive oncrete to complete floor.



terior closeup shows neatness of exposed precast concrete



The 95,000 square feet of roof and floor area in this school is supported by 4,200 feet of columns and 4,500 feet of beams . . . all precast concrete.

• Low maintenance . . . fire safety . . . long life . . . neat appearance. These are advantages of precast structural concrete construction. And equally important, units are quickly cast to specification, ready for delivery when needed. Erection is quick and easy.

In precasting the various units for this school, Lehigh Early Strength Cement was used to achieve maximum production efficiency and economy.

"Structural members were cast one day and stripped from their forms the following day and moved to storage," writes Mr. M. A. Arnold of the Arnold Stone Company. "By using Lehigh Early Strength Cement, the precasting operation was completed in half the time required had we used regular portland cement."

This is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction.

- LEHIGH EARLY STRENGTH CEMENT LEHIGH PORTLAND CEMENT
- LEHIGH MORTAR CEMENT . LEHIGH AIR-ENTRAINING CEMENT

#### LEHIGH PORTLAND CEMENT COMPANY

Allentown, Pa.

April 1959 - CONSTRUCTION METHODS and Equipment - Page 43



# ALUMINUM DUMPER HAULS 36 EXTRA TONS DAILY FOR \$7,862 EXTRA PROFIT A YEAR

Portland Cement's new aluminum dump trailer moves a net payload of 27 tons of quarried lime rock per trip-two tons more than similar units built of heavier metals. Making 18 trips a day, working around the clock week in and week out, the extra payload adds up to an extra profit of \$151.20 a week or \$7,862 a year. This added revenue enables Portland Cement Company of Utah to write off the premium paid for aluminum in less than six months. In only a year and a half, the total cost of the new aluminum dumper is returned.

The Williamsen Body & Equipment Company, of Ogden, Utah, like other leading manufacturers, builds these extra revenue producing dump bodies with durable Alcoa® Aluminum alloys. Corrosion resistant and dent resistant, aluminum provides major savings in maintenance and also cuts dead weight for added tire and gas mileage on return trips. For the names of other truck operators who are enjoying comparable benefits, plus your FREE Dump Body Folder, write Aluminum Company of America, 1774-D Alcoa Building, Pittsburgh 19, Pa.

PROOF: Aluminum is tougher!

Dump bodies built of Alcoa Aluminum have *three* times the impact resistance of steel—at *half* the weight:



Your Guide to the Best in Aluminum Value





total

Indee w exp nbine such and f For ea I brit

# BIGGEST

# n the %-yd. field! Bold new Series BOO BANTAMS



umi-

the

- Capacities to 11 tons
- Back hoe digging depth to 18' 10"
- Over 25 job-matched options

ese big new BANTAMS move farther ahead than ever total capacity to work more, do it better and finish it ter. That goes for any assignment you give it throughout NTAM'S amazing job range—working with any attachnt; mounted on carrier, crawler or self-propelled.

indeed, these all-new BANTAMS will make you marvel at wexpertly high performance and high production are nbined in such a compact, practical-sized rig—a machine such get-around ease that you profit from time savings and from the job as well as on the job!

For each dollar invested, there is nothing in its class that I bring such high profit returns so consistently over the



years. BANTAM's big-rig features and exclusive engineering advantages assure this.

Just look at all that's BANTAM-new!

New fleet of four BANTAM-built carriers for a perfect match to your job and price needs . . . new, high-strength booms up to 70' . . . new 30% heavier trunnion base design . . . new choice of three boom hoists . . . new, precision power load lowering . . . new 2-speed transmission . . . new torque converter option . . . new, deeper digging back hoe . . . new, increased line pulls . . . new, 100% use of anti-friction or roller bearings . . . new, added power—gasoline or diesel . . . and many, many more news-making BANTAM benefits.

BANTAM C-350 CRAWLER — all-new, all-powerfull Has new, more rigid car body and bolt-on side frames . . . 2-speed, full-reverse travel transmission . . . new optional in-cab digging lock . . . widest choice of crawler features for specific needs, including wide base extensions, standard or long side frames . . . high-clearance side rails. New back hoe digs 18'10". Works with all of BANTAM's 11 new rapid-change attachments. Capacity



TAM CR-350 SELF-PROPELLED—the upcoming new tool for contractors, pit ators, material handlers. Now has 4 x 4 option... automotive-type power steer-... independent travel, swing, hoist... or travel speed. Maximum stability over or sides with 11-ton capacity.



World's largest producer of truck crane-excavators



to eight tons.

ANTAM is biggest in ork ability and value...

UPON BRINGS YOU THE PROOF!

	Please send me Inform	ution on BANTAM		CM-216A
	☐ T-350	□ C-350	☐ CR-350	
6	Name		Title	
>	Company.			
	Address			
	City	Zone_	State	V dise

## States Plan Record Road Work

BOOMING highway and bridge construction promises to put more new business on the books of contractors this year than ever before. Contracting plans of state highway departments point to a 13% increase this year, on top of last year's 30% increase.

Of the 34 states and the District of Columbia reporting their 1959 contracting plans to Construction Methods, 28 highway departments plan to increase highway and bridge contracts. Only seven states plan to cut back on awards. They are: Colorado, Maine, Missouri, Ohio, Oregon, Rhode Island, and South Carolina.

The 1959 contract awards budgeted by these 34 states and D.C. total \$3,363 million, up nearly \$400 million over their actual lettings in 1958 and more than \$1 billion above 1957.

If the budgets of states that have not yet reported their 1959 plans follow the same pattern, total highway and bridge contracts could hit \$5 billion this year. This includes state, county, and municipal projects. Last year's volume was \$4.44 billion, a new alltime high and the first time that the total topped the \$4 billion mark. Construction Methods' forecast for 1959 is \$4.9 billion (CM&E, October, 1958, p. 91).

In addition to the highway construction boom in the continental U.S., substantial increases are in prospect in Hawaii and Puerto Rico this year. These two areas plan to let a combined total of \$57 million in highway and bridge contracts.

Reports from several states, including some major highway construction markets, still are not final. That's because their highway budgets for 1959 have not yet been approved by the state legislatures. These states will be included in a final report next month in Construction Methods.

#### **Push Interstate Work**

Increasing awards for interstate system projects account for the

#### Contracting Plans of State Highway Departments

	Contract Awards		How	'59 Plans		
	(in n	nillions of	Chg.	Inter-	With '5	Other than
	Plans	Actual	%	state	Fed. Aid	
34 States & D.C	3,363.3	2,989.1	+ 13	Up	Down	Down*
NEW ENGLAND						
Maine	32.4	35.6	- 9	Down	Down	Up
New Hampshire	32.4	28.9	+ 12	Up	Down	Up
Vermont	26.4	18.8	+ 40	Up	Down	Down
Massachusetts	140.2	128.2	+ 9	Up	Down	Down
Rhode Island	14.4	17.8	- 19	Down	Down	Same
Connecticut	*******	*******	*******		*******	
MIDDLE ATLANTIC						
New York			*******			*******
New Jersey					******	
Pennsylvania		*******	******	********	*******	
Maryland	63.5	53.0	+ 20	Up	Down	Down
Dist. Columbia	63.6	20.1	+216	Up	Up	Up
Delaware						
SOUTH			H BUSTER			
CONTROL OF THE PARTY OF THE PAR	114.0	76.3	+ 49	Up	Down	
Virginia West Virginia	114.0	70.3	4 44	op	Down	******
	65.0	63.0	+ 3	Up	Down	Up
North Carolina	82.5	86.4		Down	Down	Up
South Carolina	02.3	00.4	- 5	DOWN	Down	op
Georgia	152.0	110.2	+ 38	Up	Up	Up
Florida	152.0	110.2	+ 20	Up	Op	ОР
Alabama	410	44.9	. 24	Up	Up	Down
Mississippi	61.8	46.2	+ 34	100		
ouisiana	*******	*******	*******		******	******
Kentucky	*******	*******	*******	*******	*******	*******
ennessee	*******			*******	*******	******
MIDDLE WEST						
Ohio	208.0	280.6	- 26	Down	Down	Up
ndiana	116.7	103.7	+ 13	Up	Down	Up
llinois	260.0	240.0	+ 8	Up	Down	Down
Visconsin	100.0	95.0	+ 5	Up	Down	Down
Michigan	224.0	167.0	+ 34	Up	Up	Down
VEST OF MISS.			Maria Table			
	122.0	98.3	+ 24	Up	Down	Down
Minnesota	119.0	111.3	+ 7	Up	Down	Up
owa	96.0	99.2	- 3		Down	
Aissouri	70.0	77.2	- 3	Up		Down
Irkansas	49.2	40.2	+ 22	Up	0	
					Down	Down
outh Dakota	54.5	38.4	+ 32	Up	Down	Up
lebraska	46.0	40.7	+ 13	Up	Down	Up
ansas	80.0	78.2	+ 2	Up	Down	Down
Oklahoma			*******	A A		M.
9X8\$	300.0	292.7	+ 2	Up	Down	Down
fontana	76.4	36.0	+112	Up	Up	90000000
Vyoming	10271202	********	*******	*******	*******	******
colorado	40.4	53.2	- 24	Down	Down	Same
lew Mexico	40.0	39.4	+ 2	Up	Down	Up
AR WEST						
laho	30.0	29.0	+ 3	Up	Down	
tah	45.0	32.0	+ 41	Up	Down	Same
rizona	40.0	32.8	+ 22	Up	Down	
evada	32.0	18.3	+ 75	Up	Up	Up
	78.5	67.3		Up.		0
ashington	57.4	60.4	+ 17	Up	Down	Down
regon			- 5	Up	Down	Down
alifornia	300.0	250.9	+ 20	Up	Down	Up
lawaii	23.3	10.3	+126	None	Up	None
uerto Rico	33.5	17.6	+ 90	None	Up	Up
30 States & D.C.				777		



PROJECT PAYDIRT\* pays off for V. R. Dennis Construction Co., San Diego, Calif.

## "Our new DW20's power and easy loading give more yardage"



#### NEW FROM CATERPILLAR

NEW DW20

New Speeds—increased rimpuli—provides up to 20% faster travel speeds under normal heul road conditions.

NEW No. 482 Series B

NEW No. 456 Series B isw Capacity-24 cu. yd. (struck rating) 34 cu. yd. (hosped rating)

New Capacity-19.5 cu. yd. (struck rating) 27 cu. yd. (heaped rating)

NEW DW21

New Rimpall—49,100 lb. (maximum)—increased 12%
New Speeds—increased rimpull—provides up to 20%
faster travel speeds under normal haul road
conditions.

NEW No. 470 Series B Serapor New Capacity—19.5 cu. yd. (struck rating) 27 cu. yd. (heeped rating)

Faster cycles, greater production, more profit... you get all three with the new Cat DW20...plus Caterpillar reliability.

Dennis Construction Co. uses three new DW20s, Series G, with No. 482 LOWBOWL Scrapers to stockpile sand for a concrete and asphalt batch plant. Speed, power and ease of loading are big factors in increased production. The DW20s carry an average of 32 cu. yd. of sand over a 1½-mile round trip in 7½ minutes. This includes loading and unloading.

Dennis bought Cat equipment because it met their requirements in the past. "Long life and durability are big features we find in all Cat equipment. Dealer service has always been tops," says superintendent Pete McFarland.

Both the DW20 four-wheel tractor and twowheel DW21 have been given major improvements. Additional new features in the tractors include stronger final drive gears, and a new turbocharger. The 345 HP Cat Diesel Engine in each tractor produces torque rise unequaled in the earthmoving industry. Scrapers have stronger bowls, push frames and aprons.

These modern, heavy-duty rigs enable you to move more dirt at the lowest cost per yard. Get complete facts on the new DW20, DW21 and other new Caterpillar machines all powered-up by Project Paydirt. Call your Caterpillar Dealer today. Set the time and place for a demonstration.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

## CATERPILLAR

BORN OF RESEARCH... PROVED IN THE FIELD

\*PROJECT PAYDIRT: Caterpillar's multimillion-dollar research and development program — to meet the challenge of the greatest construction era in history with the most productive earthmoving machines ever developed.

# mezzanine "basement" and open floor areas achieved with space frames and shell roof of concrete!

New ways of using concrete are bringing intriguing design possibilities to architects, with truly practical benefits for their clients. At Texas Instruments, Inc., Dallas, Texas, a trussing technique, using precast concrete V-tetrapods, made it possible to place some 36 special utilities in a walk-through mezzanine between floors. And concrete hyperbolic

paraboloids not only created an interesting roof line, but allowed flexibility for assembly line or plant expansion by providing great expanses of unobstructed floor space.

Architects: Associated Architects, Dallas, Texas. Engineer: James McDade, Texas Instruments, Inc.

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete





or of

CLR.

nc.

## typerbolic paraboloid roof gives simple forming at low cost

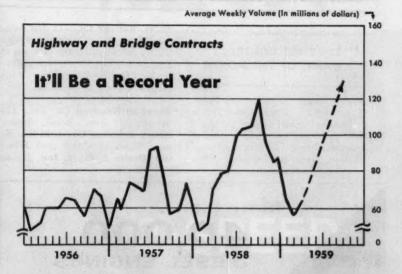
Ithough hyperbolic paraboloids, used t the Texas Instruments plant, are urved in two directions, they can be ormed without having to bend or curve umber or reinforcement. Repeated use f forms give even greater economy.



# Concrete V-tetrapods create service area between floors

The prestressed, lightweight concrete eiling slab and the second-floor slab re braced by 5,000 psi concrete diagoals, precast on the site. They were prouced in pairs, joined in an inverted V. wo pairs were then interlocked to nake four-legged braces (V-tetrapods). These were placed in position and anhored before top slab was placed.

or free literature on shell construction (disributed only in U.S. and Canada) write Portland Cement Association, Dept. A4-2, 33 West Grand Ave., Chicago 10, Illinois.



rise in contracting plans by state highway departments. Twentynine states and the District of Columbia are planning to let more interstate highway work this year than they did in 1958. Among these states are Missouri and Oregon, which have scheduled an increase in interstate work even though reductions in other highway programs pull their over-all budgets below 1958.

But other highway programs will provide less new work than last year for contractors. Of the 34 states and D.C. reporting, 29 plan to reduce awards for "ABC" federal-aid highways this year. This reflects the extra \$400 million in emergency funds appropriated by Congress in 1958 for state highway projects to be let by December 31, 1958. Without that bonus this year, state highway awards in this category naturally will drop. Federal matching funds for "ABC" primary, secondary, and urban highways in fiscal 1960 are authorized at \$900 million. The extra emergency funds boosted total authorized federal funds for these highways to \$1,275 million in fiscal 1959.

More than half of the reporting states plan to increase 1959 lettings for highways financed without federal aid, but four out of ten states are planning to cut back awards in this category.

#### Several States Get More for the Money

Several state highway departments will stretch their construction dollars further than they anticipated this year. The reason: highway contractors have cut bid prices to meet the rugged competitive situation in the highway market.

This is true for at least nine states: Colorado, Florida, Idaho, Michigan, Nevada, New York, Oregon, Texas, and Washington. Bid price indexes reported by these state highway departments dropped in the final quarter of last year anywhere from 2.6% to 12% below the third quarter.

By contrast, California and South Dakota are the only two states reporting quarterly price indexes with increases in the final quarter of 1958. But the fact that the Bureau of Public Roads Composite Mile Index also rose late last year points to increases in many other states. That's because BPR's index covers bids on interstate highways let by all states.

If reporting states are not unanimous on the price trend late in 1958, nearly all do agree that the competition among contractors was stiffening. Only New York reported a lower average number of bidders per project in the final quarter of 1958 than in the third quarter. Moreover, there were more bidders per project in California where the price trend was up.

The late 1958 reports show another significant point: Prices were below a year ago in 9 of the 11 states and for the U.S. as a whole, according to the BPR index. Only exceptions reported were Florida and Texas.

continued on next page

#### SOME BIG CONTRACT AWARDS OF THE MONTH

Perini Corp., 73 Montwait Ave., Framingham, Mass. Construct a vehicular tunnel under the harbor at East Boston, Mass. Mass. Port Authority, 14 Court Square, Boston, Mass. \$29,000,000. M. W. Kellogg Co., 711 3rd Ave., New York, N.Y. Construct a high purity petroleum product plant at Beaumont, Tex Magnolia Petroleum Co., N. Esperson Bldg., Houston, Tex. \$25,000,000.

Morrison-Knudsen Co., Inc., 319 Broadway Ave. Boise, Idaho, Henry J. Kaiser Co., 1924 Broadway, Oakland, Calif., and Johnson, Drake & Piper, Inc., Baker Bldg., Minneapolis, Minn. A joint venture to construct the Greer's Ferry Dam and appurtenant works on Little Red River, near Heber Springs, Ark. Corps of Engineers, 300 Broadway, Little Rock, Ark. \$17,613,384.

Blount Bros. Construction Co., 79 Commerce St., Montgomery, Ala. Construct facilities at three Atlas missile launching sites near Warren Air Force Base, Cheyenne, Wyo. Corps of Engineers, 1709 Jackson St., Omaha 2, Neb. \$12,-422,104.

Huber, Hunt & Nichols, Inc., 2450 Stibbs Ave., Indianapolis, Ind. Construct a manufacturing plant in Oklahoma City, Okla. Western Electric Co., 195 Broadway, New York, N. Y. \$12,000,000.

Twaits-Wittenberg Co. and Morrison-Knudsen Co., Inc., 507 S. Bixel St., Los Angeles, Calif. A joint venture to construct a multistory Hall of Records building in the Los Angeles Civic Center. Bldg. Supervisor, Room 501, Hall of Records, Los Angeles, Calif. \$11,464,000.

Turner Construction Co., 150 E. 42nd St., New York 17, N.Y. Construct an 18-story United Engineering Center at United Nations Plaza, New York City. United Engineering Trustees, Inc., 33 W. 39th St., New York, N.Y. \$10,000,000.

Mittry Construction Co., 2960 Marsh St., Los Angeles, Calif. Construct embankment and spillway at Abiquiu Dam and Reservoir near Espanola, N.M. Corps of Engineers, P.O. Box 1538, Albuquerque, N.M. \$8,542,100.

George N. Brewster & Co., Inc., 275 W. Fort Lee Rd., Bogota, N.J. Construct the approach roadway system for lower level expansion of George Washington Bridge at Fort Lee, N.J. Port of New York Authority, 111 Eighth Ave., New York 11, N.Y. \$7,840,653.

Winston Bros. Co. and Greene Construction Co., 1532 California Ave., Monrovia, Calif. Enlargement of Mathews Dam and dike near Riverside, Calif. Metropolitan Water Dist., 306 W. 3rd St, Los Angeles, Calif. \$7,583,866.





# RECIPRO SAW

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5 TO 20 TIMES
FASTER!



mous SKIL and SKILSAW products made only by KIL Corporation, 5033 Elston Avenue, Chicago 30, III. Canada: 3601 Dundas Street West, Toronto 9, Ontario. An entirely new concept in reciprocating saw design—cuts anything that can be sawed by hand—faster, easier, and better. Does the work of keyhole, hack, and hand saws, and does it 5 to 20 times quicker. Another major development in power tools by the originators of the famous SKILSAW power saw.

New 2-speed feature obsoletes all other reciprocating saws. Low speed cuts metal fast with minimum blade wear, high speed for fastest cuts in wood and compositions. No single compromise speed. And Skil makes a complete line of 20 Recipro Saw blades to cut virtually any material.

New off-center blade location allows cutting in tight places where only hand tools could be used before. Another plus is the reversible blade which lets you make close cuts up or down, as well as at the right or left side.

New savings in blade costs alone quickly pay for this new saw—because the new 2-position shoe actually doubles blade life! When one blade section is worn, you just reposition the shoe and cut with a new, unused blade section.

New low maintenance mechanism has only 3 main moving parts. And all parts subject to wear are heat-treated alloy steel. All ball-bearings throughout.

# EUCLID'S BIG 3

TC-12
TWIN-POWER CRAWLER



**5-18**21 YD. SCRAPER



75-24 "TWIN" SCRAPER



BIG POWER ... BIG CAPACITY ... BIG PERFORMANCE

# your best bet to beat the profit squeeze

Two engines deliver 425 net h.p. to power trains... separate Torquatic Drives and full power shift...independent track drives...27" standard shoes...8 track rollers... excellent accessibility.

30 yds. heaped...336 h.p. engine...4 speed Torqmatic Drive with converter lock-up...independent hydraulic controls for bowl, apron and ejector...27.00 x 33 tires with 33.5 x 33 optional.

Two engines with a total of well over 500 h.p.... separate Torq-matic Drives... 24 yds. struck... 32 yds. heaped... NoSpin differentials... all wheel drive... unequalled grade-ability.

WITH COSTS still on the rise, obsolete methods and machines don't help your competitive position or your profit picture... can cost you jobs and money. To get your share of work... at prices that bring a good return on investment... equipment has to produce more without increasing costs. Modern earth-moving techniques and big machines can make the difference between a problem and a decent profit.

Euclid's Big 3... part of an intensive 5-year development program... were designed to help you lick the pinch on profits. With big power, big capacity and big performance, each of these "Eucs" provides more work-ability than any other machine in its class. They'll enable you to bid more work... small jobs to big projects... more profitably. Your Euclid dealer can prove it with all the facts... you can't afford to make decisions based on partial facts. Be sure to get in touch with him before you buy any new earthmoving equipment.

**EUCLID Division of General Motors, Cleveland 17, Ohio** 



EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

# Craftsmanship...

Does it really matter if a carrier frame has had a stress analysis...if all welds are cleaned and ground...if the best component parts are used? At Hendrickson, it does matter. Hendrickson engineers and craftsmen never take quality for granted. Because of this, Hendrickson customers can always take quality for granted.

#### **HENDRICKSON** Custom Carriers

are tailored for your operation. Each Hendrickson Custom Carrier is especially designed for the specific upper works and built to the crane manufacturer's specifications.

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- 4, 6 and 8-wheelers
- · Gasoline, diesel, propane or self-propelled

#### **Hendrickson supplies Custom Carriers for:**

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   AND DERRICK
- BAY CITY
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Equipped with famous Hendrickson Tandem Suspension, the standard of truck, trailer and equipment manufacturers.













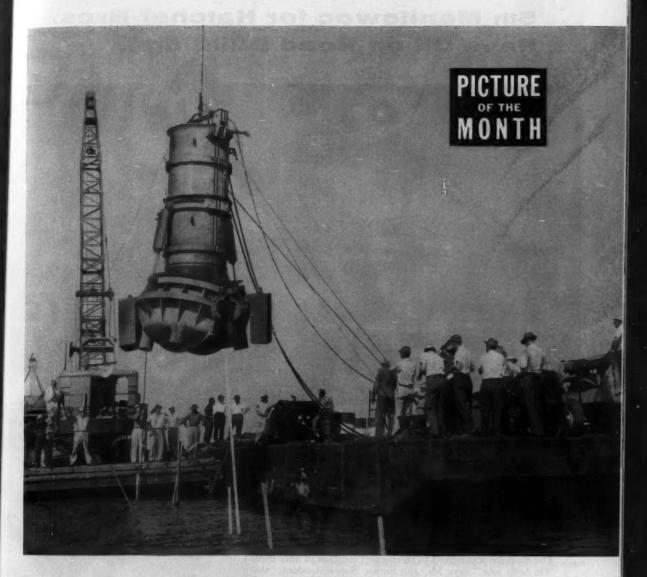








Page 54 - CONSTRUCTION METHODS and Equipment - April 1959



## A Way to Work Underwater

• With this caisson, a crew can make repairs or connections to an underwater pipeline without raising it to the surface. The caisson's bottom section clamps around the pipe, a built-in sump pump dewaters it, and workmen climb down a ladder to the watertight chamber. The bell-shaped bottom section is 7 ft in diameter with a vertical split and pipe sleeves. Hydraulic rams open and close the split sections. The barrel-shaped top section is 5 ft in diameter and 6 ft high. As many of these sections as needed can be joined to the top of the caisson so it can work in any depth of water up to 50 ft. Esso Research and Engineering Co. and Interstate Oil Pipe Line Co. developed the caisson as a joint research project. A field test on a 12-in. pipeline off the Louisiana coast was successful.

How one 21/2-yd. shovel moves 2,000 yards of hard sandstone, clay and shale a day on Ohio road job

#### 5th Manitowoc for Hatcher Bros. Pays Off on Road Building



This Manitowoc Model 3000 shovel equipped with a 21/2-yd. bucket has been averaging 2,000 yards of sandstone, shale and clay per 10 hour day working on the rebuilding of Route 39 near Salineville, Ohio. Hatcher Bros. Inc. of Mingo Junction, Ohio is handling all the excavating and grading on the \$417,000 job which calls for the regrading and removal of 117,000 yards of material, containing approximately 33% rock. In addition to the Model 3000, the company also owns two Manitowoc 11/4-yd. Model 2000 rigs and two 40-ton Model 2800 Mobile Cranes.

300,000 Yards of Rock - Prior to the present operation, the 21/2-yd. shovel loaded out 300,000 yards of rock on another Ohio road job. The machine was moved to the present location in only three loads. "On both jobs," says Mr. Jim Smith, Superintendent, "the shovel has given us smooth, uninterrupted performance, with no appreciable downtime. We have never hit a rock formation that the machine could not break up and carry . . . nor have we been halted by a machine failure."

How You Can Benefit - Fleet owners like Hatcher Bros. know they can depend on their Manitowoc rigs for consistent, high output performance on any job. Judge for yourself . . . see your distributor soon for full details on any of the eight bonus-capacity Manitowocs.



Manitowac shavel cuts a 1' x 1' slope through stratified hard sandstone. Thirty per cent the excavated rock is used as fill.

Manitowoo

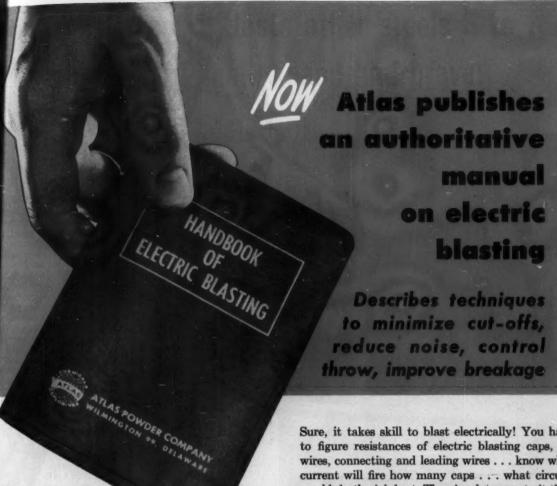
#### MANITOWOC ENGINEERING CORP.

MANITOWOC, WISCONSIN

CRANES SHOVELS DRAGLINES TRENCH HOES

20 TON - 100 TON 1-YD. - 51/2-YD. 1-YD. - 6-YD.

1-YD. - 21/2-YD.





Ask your Atlas representative to show you the electric blasting cap match demonstration. See why Atlas E.B. caps lead the field in dependable performance.

Sure, it takes skill to blast electrically! You have to figure resistances of electric blasting caps, leg wires, connecting and leading wires . . . know what current will fire how many caps . . . what circuits would do the job best. There's a lot more to it than just tying square knots! But when you have the answers to these and other factors, all covered in the new Atlas Handbook, look at the advantages you get:

- · Initiation at the point that puts the full explosive force to work
- Dependable split-second timing in each charge before the rock begins to move
- Better control of throw Minimum noise and vibration

The pay-off is in more complete breakage, quicker, safer digging, reduced crushing and maintenance costs, better public relations. Write now for your copy of the new Atlas "Handbook of Electric Blasting." Discuss the methods it describes with your Atlas representative. He has a whole kit full of ways to help lower your blasting costs and get better breakage.



WILMINGTON 99, DELAWARE



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4 Bucket times abus

# uss "T-1" Steel outlasts other steels 3 to 1 handling oyster shells, sand and gravel

at Southern Materials Corporation, Freeport, Texas

"IT TAKES a mighty tough steel to scoop cubic yard after cubic yard of oyster shell, sand and gravel day in and day out—and still not break down under rough handling and wear. In this service, USS "T-1" Steel outlasts other steels used three to one."

These are the words of a big Texan, L. M. (Buck) Clark, who started as a blacksmith and worked up to vice-president and assistant general manager of Southern Materials Corporation, Freeport, Texas. The firm provides wholesale quantities of oyster shell, sand and gravel dredged up from the Gulf bottom for fill, road construction, concrete work and the like.

All day long, the big cranes scoop up the sea material from barges and deposit it in nearby hoppers. Skilled as they are, the crane operators can't help banging the bucket against the walls and floor of the barges while picking up shell, and against the lips of the hopper at times. All that impact hastens failure in conventional materials. This leads to shutdowns and that's what they don't want.

In the past their 1½-yard clamshell buckets lasted for about six months handling sand and gravel and about twice as long scooping shell. One repair job cost \$1,280 and results were no better. Then it was decided to substitute USS "T-1" Constructional Alloy Steel for the lips, end panels and side panels of the buckets. The repair job was done in the company shop and cost about \$500. Mr. Clark says, "It's been two years since I put that "T-1' Steel in there, and it's still holding up fine."

The USS "T-1" Steel used was furnished to 321 minimum Brinell hardness and does a much better stand-uptake-it job than anything else that was tried.

Besides resistance to impact and abrasive wear, "T-1" Steel solved a severe case of corrosion from salt air in both the bucket and the hopper. Corrosion build-up had to be chipped away in the old equipment causing a lot of downtime. "T-1" Steel reduced maintenance about 50%.

This is a good example of what USS "T-1" Steel can do in materials handling equipment. It has a very high minimum yield strength of 100,000 psi so can be used to save weight. It retains remarkable toughness—down to 50°F below zero. And it can be worked and welded.

United States Steel also makes a well-known group of high-strength low-alloy steels for construction work, having a minimum yield point of 50,000 psi. These include USS MAN-TEN Steel for strength with maximum economy, USS TRI-TEN Steel for strength with toughness, and USS COR-TEN for strength with outstanding atmospheric corrosion resistance. For more information on any of these steels, write United States Steel, 525 William Penn Place, Pittsburgh 30, Pa.

USS, "T-1," MAN-TEN, TRI-TEN and COR-TEN are registered trademarks



Buckst frequently bangs against bottom of barge causing fatigue cracks. USS "T-1" Steel's greater toughness and resistance to impact abrasion and corrision more than tripled bucket life.

United States Steel Corporation — Pittsburgh Celumbia-Boneva Stani-San Francisco Tennessee Coal & Iron — Fairfield, Alabama United States Steel Supply — Steel Service Centers United States Steel Expert Company

#### **United States Steel**



Ducket and happer parts made of USS "T-1" Steel last three times longer because of "T-1 s" high resistance to impact abuse, abrasion and corrosion. THE BIG ... means Efficiency and Economy!

# TWO MINUTE TRACTOR QUIZ can be worth thousands of dollars to you...

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	Yes	(chec	k one) Don't know	(0)
Do you usually prefer proof to propaganda?				
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Do you want a machine engineered for its job not "adapted"?				
Do you want an 'automated' tractor, with no clutch pedal, that power-shifts?				-1
Do you want more work-output and less down-time?				
Is maximum visibility, as in an up-front position, important to the operator?				
Do you want custom-quality in every component those you don't normally see as well as those you do?		0		
Do you agree that independent track operation means greater maneuverability and the ability to spin turn, fast and easy?				
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Do you want a modern tractor, proven in use around the world?				
Be honest! Have you been "habit-buying" your tractors and tractor units?				
				All the same of the

If your answer is "yes" or "don't know" to as few as three of these questions, you owe it to yourself and your company to investigate all the factual advantages of the Eimco line of tractors and tractor units. Before you invest any more tens of thousands of dollars in equipment, let an Eimco sales-engineer **proof-demonstrate** the modern Eimco 105 line of tractors . . . right on your own job. There's an Eimco to fit every need . . . meet every challenge.

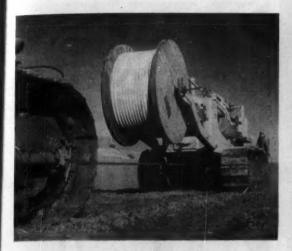
Contact the sales office nearest you or write The Eimco Corporation, P. O. Box 300, Salt Lake City 10, Utah. Do it today!



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## Construction News in Pictures . . .



#### Hard-Working Rig

Carrying a reel in front and pulling a ripper with a cable laying boot this Caterpillar D9 places up to 5 miles of cable a day. A joint venture of Lester N. Johnson Co. and Neal A. Degerstrom, both of Spokane, Wash., fitted the D9 with this special equipment to lay a 68-mile telephone line for Pacific Telephone and Telegraph Co.





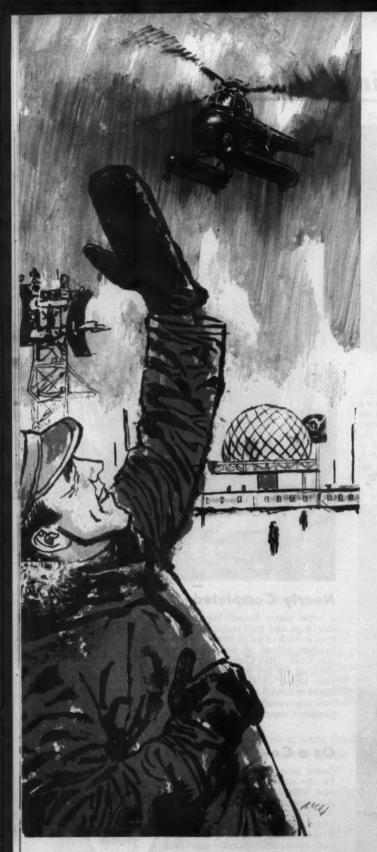
#### **Nearly Completed**

A crew places timber lagging and steel arch and wall supports for the final stretch of an 18,000-ft-long ore haulage tunnel at Bingham Canyon, Utah. Utah Construction Co. is cleaning up the job, almost a full year ahead of schedule. The big 18x24 ft tunnel is part of a \$11-million improvement at the Kennecott Copper Corp. mine.

#### On a Cold, Foggy Day

Crane pours a bucket of concrete for the massive ring girder of the new \$20-million Pittsburgh Public Auditorium. The ring girder is 4½ ft thick, 20 ft high at its outside edge, and 12 ft high on the inside. Tracks on top will carry the building's retractable stainless steel roof. General contractor is Dick Corp.

continued on page 64



Trouble shooting in remote areas. Big construction jobs in far-away places get full-time claims service from Liberty Mutual. Our men in the field are backed up by a staff of 18 claims specialists in our home office who advise on unusually tough problems. Liberty claimsmen have given policyholders assistance in such distant spots as the Arctic, Greece, Greenland and Africa.

New ways Liberty Mutual provide

# Protection in depth

- to safeguard your people
- to cut workmen's compensation insurance costs

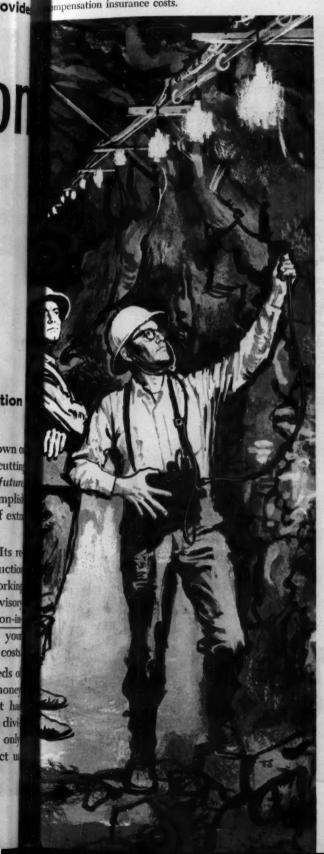
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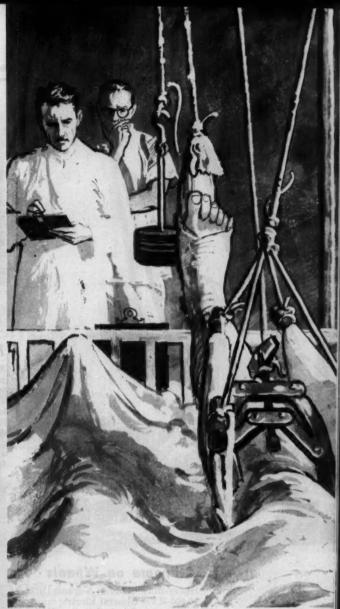
Anything you can do right now to cut down or accidents on your jobs will help toward cutting your compensation insurance costs in the future. At Liberty Mutual, we can help you accomplist this by making available a wide range of extra skills and resources.

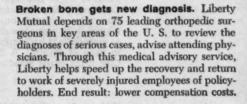
This is Liberty's protection in depth. Its resources include a full-time staff of construction safety engineers . . . 1,400 claimsmen working out of 102 Liberty offices . . . a medical advisor service. These, plus many other protection-in depth services, can help you safeguard your workers on the job and cut your insurance costs.

Protection in depth has helped hundreds of our construction policyholders save money through experience modification. And it has helped us return more than \$455 million in dividends. You can buy protection in depth only from a Liberty Mutual salesman. Contact us today for full details

stening to rock molecules. Using a micro-seismic dection apparatus, a Liberty construction safety engineer tens for "squeaks" made by rock molecules under strain. his device, developed by Liberty, makes it possible to forell the collapse of a tunnel. Our on-the-job engineering serves have helped hundreds of policyholders cut losses — and impensation insurance costs.







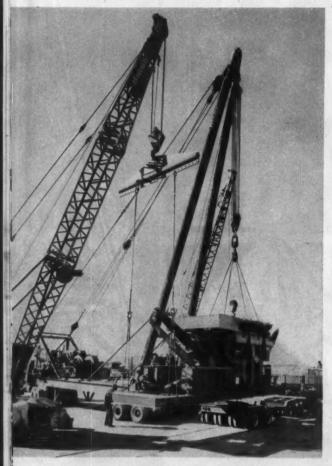


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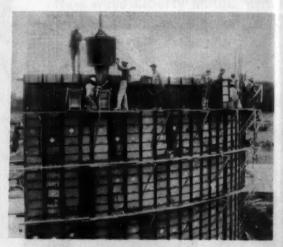


#### A-Frame on Wheels

Heavy-duty mobile A-frame lifts 40,000-KVA General Electric transformer onto low-bed trailer in the yards of Bigge Drayage Co. in San Leandro, Calif. Transformer, permanently mounted on the 42-ft trailer, will serve in emergencies as replacement for regular facilities in case of failure. A 25-ton Bay City truck crane steadies the load.

#### Piles for Sea Wall

Men of the J. F. White Contracting Co. of Westwood, Mass., line up a 43-ft length of Bethlehem Steel's interlocking sheet piling at Wollaston Beach, near Quincy, Mass. Piling will form the core of a milelong sea wall to prevent flooding of buildings in the area. Upper 9 ft of piling will be encased in concrete.



#### **Pouring Circular Wall**

Friebel & Hartman of Shelby, O., pour one-third of the wall of an 80-ft-dia concrete tank at a time. They are building four 28-ft high tanks for a Mansfield, O., sewage treatment plant. F&H forms the inside wall with four ganged sections of Symons forms, each 20 ft wide and 28 ft high, and erects outside forms as the pour progresses.

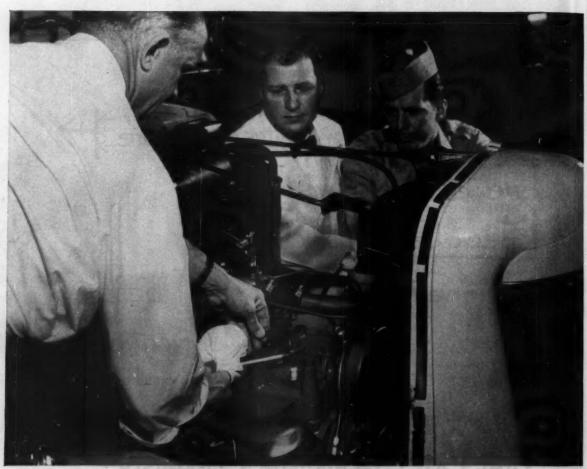


If it rolls on an axle or turns in a bearing or rides on a shaft of if it slides in a groove 5 or moves on a pivot T if it bores & or cuts & or transmits pressure 3+> one of Sinclair's 500 specialized lubricants is designed to make it work better. For answers to your lubrication problems, write today to

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# Here's how Champion "know how" your fleet improve ignition



Champion representative shows how to detect reversed coil polarity, a condition that can cause loss of power and hard starting. (See Service Tips)

#### **EXCLUSIVE TECHNICAL HELP**

When you use Champions, you get more than the world's finest spark plugs. You get Champion's exclusive technical help, too. At your request, a Champion representative will call on your fleet to help you improve ignition performance and cut maintenance costs. This Champion ignition expert will bring your shop the very latest technical "know how" from the world's largest organization devoted exclusively to spark plug research. Put this knowledge to work for your fleet. Call your Champion representative or supplier, or write Champion at Toledo 1, Ohio.



# can help performance

#### CHAMPION SERVICE TIPS FOR BETTER ENGINE PERFORMANCE

#### REVERSED COIL POLARITY

Check for reversed coil polarity by holding the ignition wire about 1/4" from the spark plug terminal while engine is running. Insert the point of a wooden lead pencil between the plug and wire (see large photo). If the spark flares or feathers, and has a slight orange tinge on the spark plug side of the pencil, polarity is correct. If the spark flares on the wire side, coil connections should be reversed.

#### CORRECT WARM-UP PROCEDURES

Unnecessary racing of cold engines should always be avoided to allow proper circulation of lubricants. This is especially important with engines equipped with hydraulic valve lifters. If the lifters are partially empty when the engine is started, running at high r.p.m. might force the plungers into a cocked position in the lifter bodies.

Some authorities recommend that a new or rebuilt engine be cranked for a minute or two with the spark plugs removed, before actually starting the engine. This permits the oil pump to completely fill the lifters and other lubrication passages . . . avoiding excessive engine wear during the first dry start.

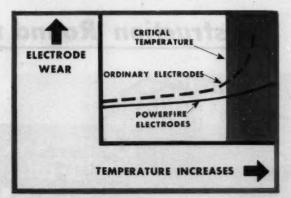
18 of 21 truck makers install

CHAMPION

SPARK PLUGS

COMPANY . TOLEDO 1, OHIO

G



#### **MAXIMUM LIFE**

Champion's Powerfire electrode lasts far longer than ordinary electrodes under heavy hauling conditions that push combustion chamber temperatures up into the critical ranges. That's why you get better performance longer, and cut down replacement costs, when you use Champion spark plugs in all your vehicles.



#### SPECIAL APPLICATION PLUGS

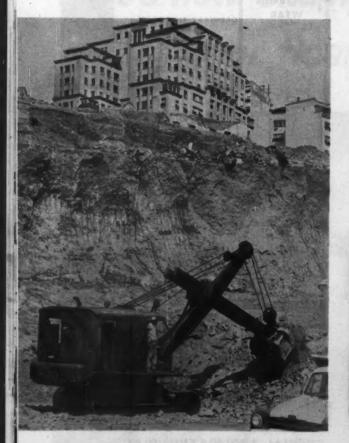
Auxiliary-pap Champions combat excessive fouling in mixer engines or similar power units that operate under continued low speed conditions. If you have a fouling problem, auxiliary-gap Champions will keep your engines performing smoothly far longer than ordinary spark plugs, and with fewer costly cleanings.



#### IMPORTANT PRODUCT FEATURES

This photo shows a standard Champion-Ceramic insulator being driven through a quarter-inch steel plate under 6,850 lbs. pressure! With insulators that resist breakage under severe conditions like these, Champion spark plugs give your fleet top performance with lowest possible replacement costs.

## Construction 'Round the World ...



#### In Brazil

A Bay City shovel more than 17 years old with a 1½-yd dipper works night and day tearing down the hill of San Antonio in the heart of Rio de Janeiro to make way for a new north-south traffic artery. Material taken from the hill is trucked to the Gloria section of the city where it is dumped as fill for a waterfront recreation park.



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#### In France

Acrow steel forms retain concrete on Roselend Dam near Beaufort. The continuous hollow gravity structure going up on the Isere River will be 500 ft high and 2,500 ft long. Its power station at La Bathie will have an installed capacity of 476,000 kw, the most powerful hydro-electric station in France.

#### In England

Cranes lift precast structural concrete members into position on a new \$2-million administration building for Shell Oil's Stanlow refinery at Ellesmere Port near Chester. The new eight-story building will stand 100 ft high and will be one of the largest buildings to go up in northwestern England.



# VERSICON

the all-purpose hose with truck-tire durability



FOR COMPRESSED AIR

It's reinforced with braided rayon-the fiber that puts 100,000 rough miles into your truck tires. Thus, with twice the tensile strength of cotton (the yarn usually put in this kind of hose), rayon reinforcement over a specially compounded synthetic tube lets Thermoid-Quaker VERSICON hose do even more jobs for you.

VERSICON hose is good for compressed air-especially for use with air-operated drills and pumps-for steam, water, oil, grease, gasoline, welding gases, and many dilute acids. Truly versatile!



FOR OIL AND GREASE

lengths up to 500 feet, sizes 3/16" to 1"; to 250 feet in sizes 11/4" and 11/4". Ask the Thermoid industrial distributor about VERSICON hose, or write Thermoid Division, H. K. Porter Company, Inc., Tacony & Comly Sts., Philadelphia 24, Pa.

In specified



FOR WATER AND STEAM

THERMOID DIVISION



H.K. PORTER COMPANY, INC.

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At \$30,000,000 Sutton Dam, Gulf fuels and lubricants help

# GULF MAKES THINGS

"Our dozers, cranes, power shovels and dump trucks have been running on Gulf fuels and lubricants for over 2 years on this project. We're right on schedule, and we haven't had a mechanical delay attributable to fuel performance or lubrication in any of this equipment."

That's the report from Leon H. "Freck" Freckleton, Mechanical Superintendent of the Arundel-Dixon-Hunkin team of contractors now in their third year of building the new \$30,000,000 Sutton Dam project on the Elk River near Sutton, West Virginia.

The joint contractors, working under the supervision

of Mr. J. H. Hay, General Superintendent, are: Arunds Construction Co. of Baltimore, Md.; L. E. Dixon Construction Co. of San Gabriel, Calif.; and the Hunkin Conkey Construction Co. of Cleveland, Ohio.

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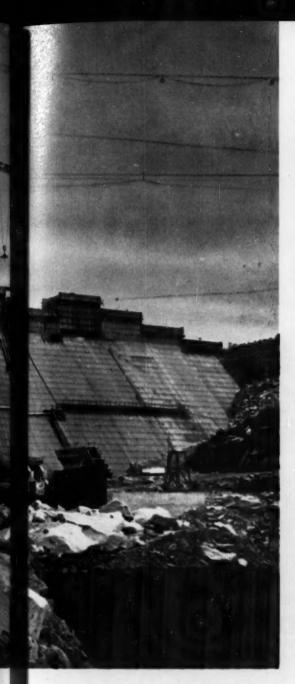
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The new Sutton Dam is another vital link in the floo control system for the Ohio River Basin. It is a projet of the First Corps of Engineers, U.S. Army. In the even of flood conditions, this dam is expected to keep the crest of the Elk River to 13 feet, as compared with a 4f foot crest that caused 21 million dollars damage in the disastrous flood of 1861.





On-the-job lubrication at Sutton Dam project. Here a lube truck pulls up to a dozer for a track lube job with Gulflex A, a lithium base multi-purpose grease that resists heat, water, oxidation, rusting.



J. H. Hay, right, General Superintendent at Sutton Dam project, discusses fueling and lubricating schedules with John Hindsley, Gulf Sales Engineer.

nel keep project on schedule . . .

## SRUN BETTER!

over 380,000 cubic yards of earth and rock will have n moved—and more than 610,000 cubic yards of conte placed—when the dam is completed late in 1959, the project started in November 1956, Gulf fuels lubricants have racked up an unusual record of tible-free performance and operating economy.

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low about your operation? See how Gulf makes igs run better—operation-wise and cost-wise. Just your nearest Gulf office. Meanwhile mail coupon for lage "Contractors' Guide" — the lubrication and atenance manual for heavy equipment.

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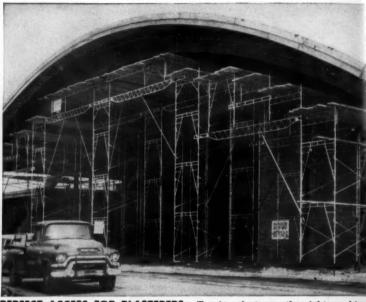
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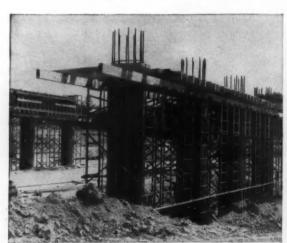
## Scaffolding Methods . . . by Patent Scaffolding Co.



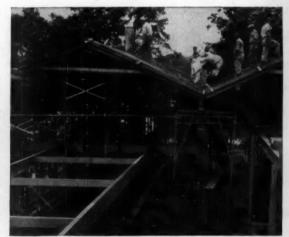
STEEPLE WORK PLATFORMS—Workmen for J. P. Roberts & Sons, contractor, guide into place a new steeple on this church. Wide, stable platforms made of "TubeLox"® Steel Scaffolding are built up rapidly.



PERFECT ACCESS FOR PLASTERERS — To give plasterers the right working heights at the underside of the curved, cantilevered roof of the Penn Fruit Building, Bergen Mall, Paramus, New Jersey, the contractor, Acme Plastering Company, uses "Trouble Saver" Sectional Steel Scaffolding. First, frames are erected in towers. Then, they are joined by trusses which lock the units together and also make wide platform areas.



HEAVY PIER SUPPORT—On the North-South Ohio Turnpike, joint venturers, Kiewit-Condon-Cunningham, provide support for the formwork for these bridge piers by using "Trouble Saver" Shoring made from 2'-wide ladder frames erected to 26'-high towers spaced 5' apart. Built-in ladders provide easy access for forming work. 20" adjustable legs permit exact height adjustment.



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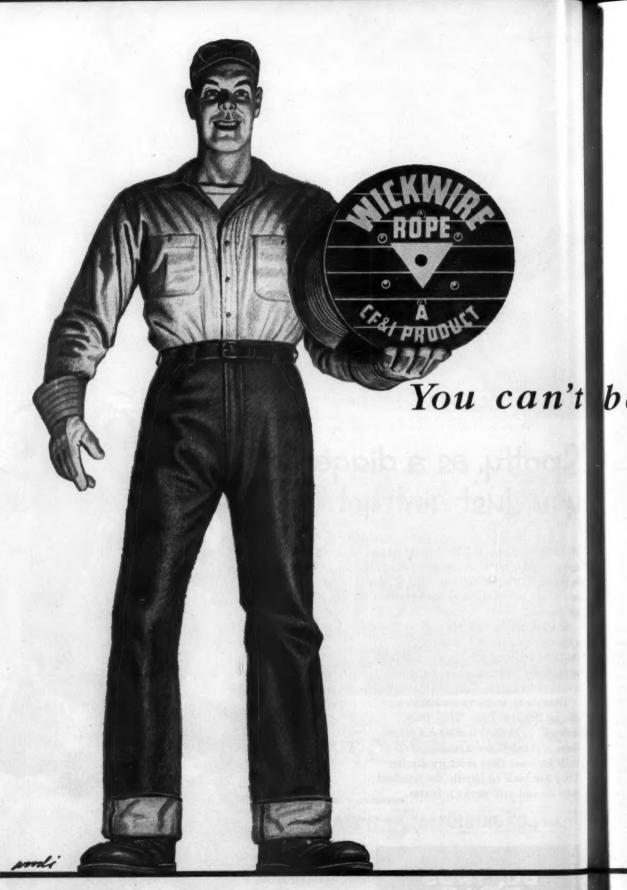
SHORING A FOLDED PLATE ROOF—To make sure that the angle joints of this folded plate roof system do not move when the concrete, 4° to 6° thick, is poured, the contractor, Brick and Concrete Construction Co., uses "Trouble Saver" Sectional Steel Shoring placed to support the impact load on each adjoining folded plate section. New Charter Road School, Acton, Mass.



THE PATENT SCAFFOLDING CO., Inc.

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## bargain with safety!

Use a safe wire rope...use

## CF&I-WICKWIRE

This giant steelman is the Image of CF&I—and of the many steel products produced by CF&I for every type of industrial use. He represents the quality controls that CF&I exercises during every step of manufacture—from ore to finished product.

Nowhere is this exacting attention to quality more rigorously followed than in the production of Wickwire Rope. That's because a quality rope is a safe rope. It helps the user eliminate losses due to injuries or wrecked equipment that can result when a "bargain" rope fails.

Wickwire Ropes are available in a complete range of sizes, constructions and grades—including Wickwire Double Gray extra-improved plow steel rope for your extra high strength rope requirements.

For safety's sake, use a quality wire rope . . . buy Wickwire.

#### WICKWIRE ROPE

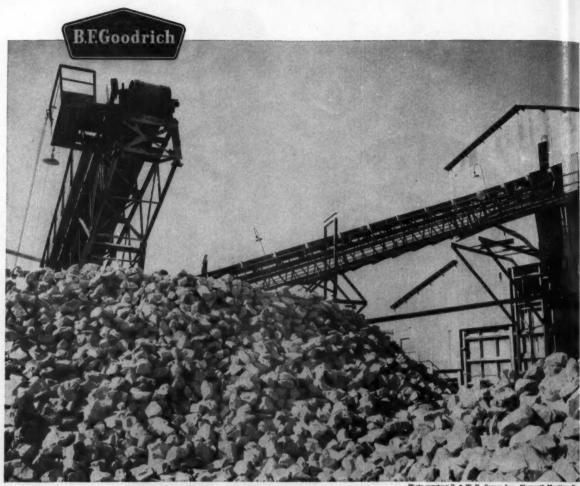
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## **Hurrying upstairs** with a mountain of rocks

B.F.Goodrich improvements in rubber brought extra savings

THOSE rocks are on their way to the top of that building. But getting them way up there was once a problem. The angle is too steep for a regular, smooth-surfaced conveyor belt. The rocks would have tumbled back down faster than the moving belt could carry them up. It looked for a time like the incline angle would have to be reduced; a longer, more expensive conveyor used.

But after discussing it with a B.F.Goodrich distributor, plant engineers decided to try a special kind of conveyor belt developed by B.F.Goodrich This "Riffle Grip" belt, as it is called, is made with a series of extra-tough rubber ridges molded into the cover. The tread that these ridges form holds the rock in place.

This B.F.Goodrich belt was tried,

and it works perfectly. It takes some 500 tons of rock an hour on the long, steep ride up to the crusher. There's been no slipping, no sliding, no prob-lems of any kind.

The belt is equally useful for carrying wet materials up steep inclines. In

many cases, it's used to drain off water from the load being carried. But by changing the angle of incline and troughing idlers, this same belt can carry such sloppy materials as wet concrete and keep the water from draining

Your B. F. Goodrich distributor has the exact specifications for the B.F.Goodrich conveyor belt described here. And, as a factory-trained specialist in rubber products, he can answer your questions about all the rubber products B.F.Goodrich makes for industry. B.F. Goodrich Industrial Products Company, Dept. M-554, Akron 18, Ohio.

## B.F.Goodrich industrial rubber products

# Construction Methods AND EQUIPMENT

APRIL. 1959

VOLUME 41 . NUMBER 4

HENRY T. PEREZ, Editor

#### Discrimination

"Prequalification of bidders has for its main objective the selection among interested contractors of those firms or individuals considered to be capable of performing the work in an acceptable manner within the specified time period."

So said the Bureau of Public Roads' W. E. Reed to a group of highway contractors. And he warned that prequalification should not be used as a device to prevent responsible contractors—either resident in or foreign to the state where the work is to be done—from bidding or accepting the jobs.

Some 38 states require prequalification of contractors for highway work. And the contractor's status usually is based on his firm's experience, financial resources, state of current contracts, and availability of equipment and qualified personnel

There is no uniformity among the states, however, as to how these factors will be analysed and weighed. So it is possible for bias to creep in and for contractors to be penalized unfairly.

The qualifying procedure, Reed warned, should not be entrusted to persons of capricious tendencies or poor judgment. Incorrect qualification can diminish competition, raise costs, and delay completion of projects.

Contractors on private as well as public work may be discriminated against in other ways, too. These are in the areas of taxation and licensing. Presently, 19 states require contractors to be licensed. Others are considering it. And some are also considering discriminatory rules that would be advantageous to resident contractors and burdensome to those from out of state.

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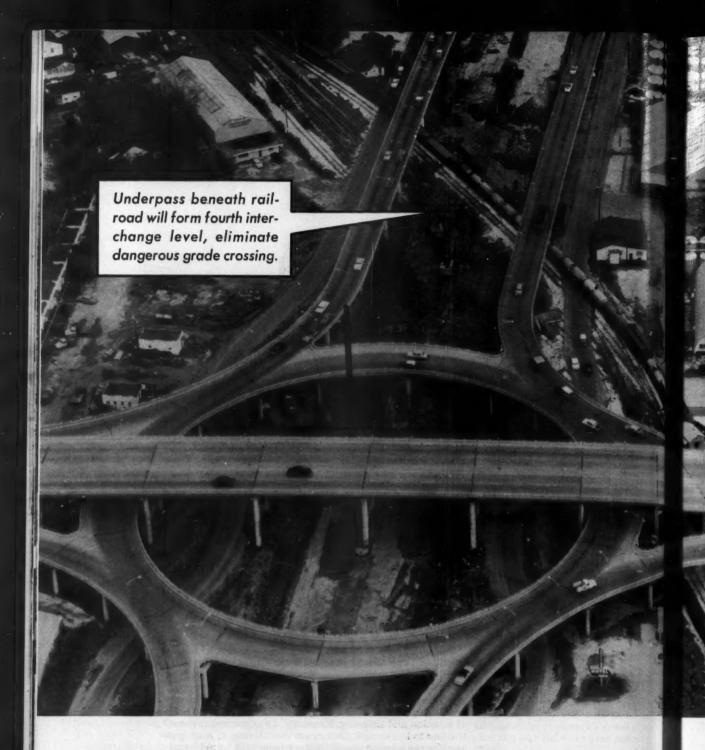
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Well, no responsible contractor should have to try to compete with another who is given preferential treatment. And, in truth, if one state does discriminate against contractors from another state, it will not be long before retaliatory laws are passed. Then who will benefit? This country has grown great through honest, fair competition between responsible contracting companies. Let's not spoil it.



## Cramped Roadbuilder Solves Space

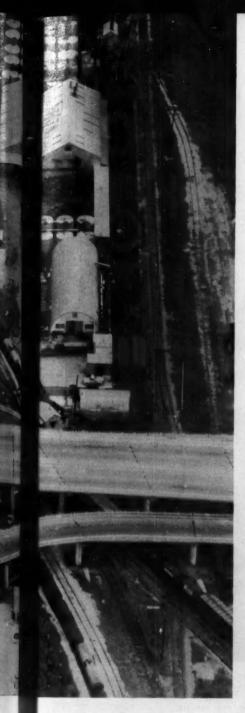
ADDING a fourth road level to an existing three-level highway interchange is likely to be a complicated job. It's especially difficult when the fourth level has to go underneath the other three, and the contractor has to keep all regular traffic moving during the construction.

That's the situation that the

R. P. Farnsworth Co. of New Orleans is facing on its current \$2 million contract to build an underpass beneath the Airline Highway-Causeway Blvd. Interchange in New Orleans.

The biggest problem is lack of headroom. Some of the pile-driving and excavating has to be done under the ramps of the existing interchange where there is not enough overhead clearance for most cranes of pile drivers.

To handle the work in these tight spots, Farnsworth crews have developed some special jobbuilt equipment. An improvised drop-hammer and hairpin head allow them to start driving sheetpiling with less than 5 ft clear-



ground water level. Farnsworth keeps the water under control with cofferdams and an extensive drainage and pumping system.

#### **Complex Site**

The three levels of the interchange funnel a heavy volume of traffic over the site.

The top level is the north-south Causeway Blvd. that carries traffic between New Orleans and the Lake Pontchartrain Causeway.

The second level is an elevated circle that sorts out traffic passing from one level to another.

The third, or ground level, is the six-lane, east-west Airline Highway, the main route from New Orleans to the city's airport and to Baton Rouge.

The complications really start on the ground level. Near the center of the interchange a four-track main line of the Southern Railway crosses the Airline Highway at a 35 deg skew. This level crossing has caused several serious accidents and it is to remove this hazard that the Airline Highway is being lowered to pass under the railway.

It was essential to keep the rail line open at all times because a freight train stopped at this point would block dozens of other intersections also. So the first move was to construct a bypass line to carry trains around the site. The Southern Railway did this with its own forces.

The next move was for Farnsworth to build a road detour on each side of the Airline Highway to divert auto traffic. Then they started work on the underpass.

The underpass structure will consist of eight 57-ton plate girders, each 10 ft deep and 95 ft long. American Bridge Division of U. S. Steel Corp. has a subcontract to fabricate and erect the steelwork. Each girder will be supported at one end by retaining walls on one side of the highway and at the other end by a long pier wall in the middle of the divided highway.

#### **Building the Piers**

To pour the retaining walls and the pier wall in the watersaturated ground, Farnsworth had to build sheetpile cofferdams completely around the three pier sites.

They immediately ran into a problem here because the retaining walls are under the ramps of the second level of the interchange. The clearance from ground to ramp was 24 ft. This was not enough to put the piles in position and get a hammer on top to drive them down.

Farnsworth first tried cutting the sheet piling into short lengths and welding the lengths together as they drove them down. This worked, but it was a laborious process. They were getting in only six full pile sections per day.

Then they developed a drophammer rig that boosted their piledriving progress to 25 sections per day.

The rig consisted of a short piece of 12 x 12 WF section with a slot cut out of the web so it would fit vertically over the pile. Between the WF piece and the pile was a head made of 6-in.

## **Problem**

ance above the piling. A drastically shortened boom on a Koehring crane lets it work easily under the ramps. And a homemade, truck-mounted A-frame handles light lifts in restricted working areas.

Another problem, less serious but always present in New Orleans construction, is the high



LOW HEADROOM—Ramps of existing upper levels hamper excavation equipment on site. Problems really start later on when pile driving rigs try to operate under ramps.

## CRAMPED ROADBUILDER SOLVES SPACE PROBLEM . . . continued

steel plate. The plate had lugs on each side to guide the WF as it slid up and down over the plate. It also had guides on the bottom to hold it on the pile.

A 1,000-lb block of concrete in a welded steel box was attached to the top of the WF piece. Welded on top of this box was an eye for the crane hook to grab. The crane lifted the weight a few inches at a time, allowing it to drop and drive the pile.

This hammer got the pile section down until the overhead clearance was 17 ft. A regular No. 1 Vulcan hammer, mounted on a Koehring 605 crane with a 50-ft boom and H-section spud leads, drove them the rest of the

#### Pre-Threaded Piles

It was difficult to thread adjacent sections of the interlocking sheet piling in the limited space. So Farnsworth linked as many as eight sections together at a time and swung them in as a unit under the ramp for driving.

The two cofferdams for the retaining walls are 350 ft long and 15 ft wide. The cofferdam for the middle wall is 18 x 140 ft. All three structures are internally braced with assorted sizes of steel pipe at the top and heavier WF struts towards the

A Koehring 605 crane with an 80-ft boom and a 1½-yd clamshell bucket excavated the earth in the cofferdams. A second 605 with a 60-ft boom and a 2-yd dragline bucket handled roadway excavation between the cofferdams.

#### **Ground Water**

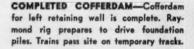
Ground water normally seeps into the cofferdams at a rate of 20,000 gpd. This flow increases considerably after every rainfall. To handle the water, Farnsworth set up two 4-in. and three 2-in. Gorman-Rupp pumps at various locations in the cofferdams. They move these pumps around where needed to handle seepage.

In addition, one 2-in. Flygt electric submersible pump stays right with the concrete crew in the cofferdam to keep their working area dry. The Flygt operates right around the clock although the men work only one 8-hr shift per day.

Most of the retaining and pier

# Driving Sheet Piles For Wall Cofferdam Is Awkward Job

LINKED PILES—Crane positions sheet piles that have been linked in advance. Up to eight piles are handled together so it's easier to set piles under ramp.







wall foundations sit on Raymond pipe piles. Raymond drove these piles under a subcontract from Farnsworth. In the restricted area, where big Raymond equipment couldn't operate, Farnsworth drove the foundation piles themselves. The piles were 14-in. spiral pipe piles supplied by L. B. Foster Co. A total of 109 of these piles, ranging in length from 60 to 85 ft were required.

Farnsworth drove the piles in 10-ft sections, welding them together as they went down. They couldn't use swing leads under the ramps because state highway department specifications called for fixed leads on foundation pile

driving. So they had to modify a rig so that it could get under the ramps.

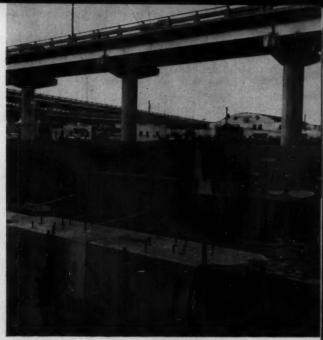
To do this they cut a section out of the boom of a Koehring 304 crane, shortening the normal 50-ft boom to 18 ft. On this they mounted 23-ft leads. A Vulcan 50C double-acting hammer did the driving.

The footings for the walls were more difficult to form than ordinary footings because they are designed also to act as a sidewalk and roadway curb. This meant that the alignment, forms, and finish had to be accurate. It took Farnsworth about twice as long to put in this type of finished

#### **Walls Require Good Forming**



FOOTINGS—Footings, designed to act as sidewalks and curbs for roadway, must be aligned and formed with unusual accuracy.



WALLS—Economy panel forms handle straight sections of wall. Forming becomes more intricate around bridge seats for girders.



DRAINAGE—Old steel wall forms perform unusual forming job to contain a 2-ft drainage wall of sand placed against retaining wall.

concrete than they would have spent on ordinary concrete for buried footings.

Because the roadway is well below ground water level, an elaborate permanent drainage and pumping system had to be installed. This includes a vertical layer of sand outside the retaining walls and a layer of gravel under the road. Water drains through these pervious strata into sumps. From there, pipes carry it to a pumphouse under one of the ramps where it is elevated to ground level and removed.

Farnsworth built the 2-ft thick wall of sand outside the retaining walls almost as they would a concrete wall. After the retaining wall was finished they set into the ground a row of old 4 x 4-ft steel wall forms two feet from the wall. Between these forms and the retaining wall they placed the sand. Simultaneously, they backfilled ordinary fill up to the forms with a John Deere loader.

When the sand and backfill reached the top of the forms, they raised them 4 ft and repeated the process. To handle these light lifts as well as to perform other similar chores under the ramps, Farnsworth mounted a job-built pipe A-frame and winch on a Ford truck.

#### **Pumphouse**

Farnsworth really got cramped for working space when they started to build the permanent pumphouse. To keep it out of the way, the designers had located it under one of the ramps. Overhead clearance was 22 ft, the lowest encountered on the job.

Distributed around the perimeter of the circular pumphouse site were five installations, all of which represented construction obstacles for Farnsworth: the temporary railway detour; across from this, the temporary road, carrying heavy automobile traffic; two concrete piers for the overhead ramp, one on each side of the pumphouse; and, filling in what little space remained, the site of one of the retaining walls.

There was only one feasible building sequence for the pumphouse. The circular cofferdam wall for the pumphouse overlapped the site of the retaining wall, so the temporary structure had to be completed first. With the pumphouse complete except for the roof, the circular cofferdam was removed, and the cofferdam for the retaining wall for the underpass built. Then the roof of the pumphouse, which will overhang the retaining wall, could be completed.

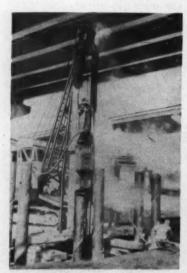
Farnsworth sunk the circular cofferdam in two stages because of the limited headroom. The first stage was a ring of MP 123 inter-

#### CRAMPED ROADBUILDER SOLVES SPACE PROBLEM . . . continued

# Pumphouse Site Adds New Problems



BRACING — Workman prepares earth form for second concrete rib in cofferdam.



PILEDRIVING—Crane with 18-ft boom gets under ramp to drive foundation piles.

locking sheet piling that went down to a depth of 13 ft.

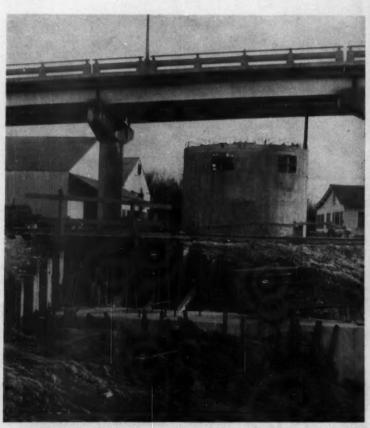
To brace this ring, they poured in place two 2 x 2-ft concrete circumferential ribs, one near the top and the other near the bottom. They reinforced the ribs with 12 No. 11 bars. No forming was needed for the ribs. When the excavation reached the level where the first rib was required, a crew simply spaded out a circumferential excavation around the inside of the sheet piling and used the earth as a form. Then they excavated the cofferdam down to the level of the second rib and repeated the concreting procedure.

Inside the first ring of sheeting they drove an inner ring of MP 115 piling an additional 33 ft to a total depth below ground level of 46 ft. They braced this ring in a similar way with two reinforced concrete ribs.

The 14-in. foundation piles for the pumphouse were 60 ft long. They were driven in two sections by the crane with the shortened boom and the Vulcan hammer. To position the piles, the A-frame truck carefully slid the 30-ft pipes in under the 22-ft ramp. Once in place there was plenty of room to drive them.

#### Men on the Job

For Farnsworth, H. Pratt Farnsworth, Jr., is project manager, and Marvin Amacker is superintendent. J. C. McGrew is project engineer for the Louisiana State Highway Department.



CONGESTION—Pumphouse site is ringed by ramp piers, rail line, and road on other side in addition to overhead ramp. Roof cannot go on until retaining wall is completed.

Because there is room for an air-powered mucker to work inside it as it advances, an Indianapolis contractor's shield eliminates hand mucking. And to keep it advancing uniformly on correct line and grade, they fitted it with simple devices that instantly signal any divergence to the shield's operator.

d



AT THE FACE—Horseshoe-shaped shield supports ground as Eimco mucker works under it to load muck car. In foreground is Atlas locomotive that moves muck trains to shaft.

## Horseshoe Shield Tunnels Fast

TUNNELING its way along beneath the city of Indianapolis is a horseshoe-shaped shield. Such shields are rarities. That's because, like all shields, they have a tendency to cant or roll about the longitudinal centerline. With a circular shield and its round symetrical bore, this is not much of a problem. But with a horseshoe, it's obviously serious. Nevertheless, Square & Marra Construction Co. of Indianapolis has the problem licked and is advancing its 15x15-ft horseshoe sewer tunnel at better than 4 ft per hr.

The job is Section A of the Indianapolis Sanitary District's North Keystone Storm Sewer. Included in the 5,500-ft, \$1.5-million section is 2,200 ft of tunnel.

Tunnel construction of sewers, while not entirely foreign to the Indianapolis area, generally is considered economically unfeasible. It has been avoided by governmental agencies and utilities alike. Consequently, this project, designed by local consulting engineers Moore & Heger, offered a unique opportunity to exert considerable influence on the public-works thinking of the rapidly expanding metropolitan community. The challenge was to prove conclusively that tunneled sewers are an especially good bet in congested areas such as this project serves.

Square & Marra isn't saying anything specific about these implications. But they report highly satisfactory progress of up to 35 ft a shift, 317 ft in five two-shift days, in typical Indianapolis compacted sand and gravel 25 ft below ground.

Key to this progress is a 15 x 15-ft Mayo shield 16 ft long and weighing 35 tons. The shield is open on the bottom, and its sides ride on standard 16-in. channels 6-ft long. The steel skin plate is 1 11/16 in. thick. So is a hood that overhangs the face at the front and extends halfway down each side. This hood preceeds a built-up cutting edge on the shield. And it rests in soil above and in front of the face to provide added stability.

#### **Jacks Shove Shield**

Spaced around the rear of the shield are 12 Rodgers 100-ton hydraulic jacks. These advance the unit 54 in. at a time by pushing against tunnel ribs. Jacks are controlled from a pump deck built into the shield 7 ft above tunnel floor. This deck also provides necessary transverse bracing to hold the shield's sides.

The biggest tunneling problem was learning to handle the shield efficiently. With any shield, the operator is charged with maintaining uniform forward motion precisely on grade and line, a responsibility where timing is of paramount importance. He must be alert to changing soil conditions, to the slightest discrepancy in shield movement to right or left or up or down, almost before it happens. The operator must constantly adjust his jacks, holding some and throwing compensating hydraulic power to others.

continued on next page



HAULING MUCK—Narrow-gage track on sewer invert leads from face to access shaft. The completed sewer is 12 ft in diameter.



INSPECTING TUNNEL—Contractors Raymond and Anthony Marra look over their job. Ground in this not-yet-lined section of 15x15-

Ordinarily, forward progress of a shield is measured by a man at each side of the shield's tail. They call "lead" readings to the operator. And here is where trouble comes in. The operator is unable to work by feel and in the past has been without an accurate mechanical device to signal the onset of a hang-up—a condition that causes the hydraulic pumps to throw too much fluid to the free-moving side of the shield too quickly to be corrected. Result: the operator may find his shield off line before he has a chance to check measurements.

#### Signaing Device

To prevent this, Square & Marra worked up a simple yet ingenious device for instantly indicating to the operator when the shield is diverging off line. They welded a lug to the ram shoe of the two jacks at tunnel spring line. And extra-flexible ½-in. cable runs from each lug, around a series of pulleys, to an indicator weight that hangs from the rear of the shield in view of the operator. The weights for each of the two jacks hang side by side. As long as the shield moves uniformly, the weights rise evenly together. If one side should hang up, it is instantly apparent.

In addition, the contractor hung two plumb bobs on shield centerline in front of the operator. These give him a constant check on whether the shield is pitching up or down or canting right or left. Canting



ft bore is supported by 5-in. 16-lb Commercial ribs solidly lagged with 4-in. timber.



DUMPING MUCK—Crane at top of shaft empties 2-yd muck car into truck. At right, steel sets wait to go down into the hole.



LOWERING FORM—At junction of tunneled sewer with opencut section, Northwest No. 6 lowers a Mayo steel form.

is controlled by a pair of "flappers" or adjustable shelves on the front of the shield, each operated by its own hydraulic jack.

While the shield inches its way forward, an airpowered Eimco 630 mucker excavates the face. It digs directly into the soil enclosed by the shield's cutting edge. This releases pressure in the soil formed by its normal compaction, so the sand and gravel tend to slide down in, slightly forward at tunnel floor level. No hand mucking is required.

The Eimco mucker is small enough to operate in the space, usually about 4 ft, between the front of the shield's pump deck and the tunnel face. It also can shuttle beneath the pump deck to load spoil into a train of 2-yd muck cars. An Atlas battery-powered 1½-ton electric locomotive moves the loaded train to an access shaft. Here an Osgood 250 crane above ground raises the cars and empties the spoil into Ford F-750 dump trucks for disposal.

Behind the shield, the tunnel is supported by Commercial Shearing & Stamping two-piece steel sets. Ribs are 5-in. 16-lb, assembled with butt plates in the tunnel. They are man-handled into place on scrap timber foot blocks. Heavy timber struts at floor level brace the ribs transversely. Rib spacing is 48 in. or less, depending on soil conditions and depth of cover.

The tunnel is lagged solid with 4-in. native hardwood in 4-in. random widths and 4-ft lengths. The void behind the lagging, created by the shield's tail as it advances, is grouted by an Airplaco machine.

Inside the 15-ft horseshoe bore, Square & Marra pour a 12-ft ID concrete sewer. Concreting in 60-ft lengths follows excavation within 48 to 72 hr. First they pour a 120-deg invert, then the arch in Mayo steel forms. Reinforced with 450 lb per lin ft of Truscon bars, concrete is a 3,500-psi mix containing Pozzolith. A Rex 160 Pumpcrete machine shoves it into place in the forms.

#### **Natural Ventilation**

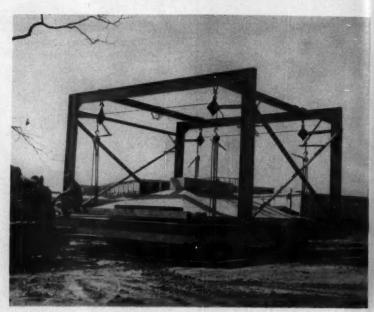
At the shaft head, two LeRoi compressors furnish 1,100 cfm of high-pressure air for tunneling operations. No extra ventilating air is required; sufficient natural draft is created by the shaft and the rear open end of the sewer.

Ground water is a problem on the job, for a significant section of the tunnel parallels White River. But Layne-Northern deep wells on 500-ft centers, and a Griffin wellpoint system in the tunnel, are keeping the work area dry.

Square & Marra is a joint venture formed in 1951 by Square Construction Co. of Baltimore and Marra Construction Co., Cleveland. Contributing to the success of this Indianapolis job are Anthony J. Marra, partner; his brother Raymond, project manager; Richard Stier, project engineer; and superintendents R. W. Thomas, Chas. Patrum, and Dewey Passmore.

## Beams, Hoists, and Spare Wheels

A novel, job-made rig tops a group of clever ideas at work on a Georgia job. It's a rubbertired dolly that carries concrete canopies but also can be adapted to handle prestressed concrete beams or wall panels.



DOLLY—Rig measures 15x35 ft and stands 9 ft high. The contractor put it together with surplus aircraft wheels, puller hoists, and an assembly of steel beams.

A RUBBER-TIRED DOLLY is the answer to 108 problems on the \$17-million Lenox Square Shopping Center in Atlanta, Ga.

All of the problems, though, really are one—how to strip and transport 108 delicate, light-weight, precast concrete canopies for an arcade at the 900,000-sq-ft project.

Lenox Contracting & Engineering Co. of Atlanta, the contractor, built the dolly simply by fitting four puller hoists to an assembly of steel beams and surplus aircraft wheels. Result—an efficient gadget that handles the canopies safely and easily.

The canopies are 12½ ft wide, from 24½ to 26½ ft long, and weigh between 10 and 12 tons. The contractor casts them on plywood forms set on a 6-ft-high frame of Patent's tubular steel scaffolding. They are cast on scaffolding towers for two reasons: (1) It's easier to collapse the bottom forms without injuring canopies; (2) It's easier for the

dolly to back up over the scaffolds and pick up the canopies.

It takes a full day to prepare for a pour. The contractor first fabricates six sets of forms over scaffold frames. Then, they put down a layer of 6x6-6/6 steel mesh and 720 lb of reinforcing bars.

#### Concreting

Concreting gets under way the following day. Concrete is batched on the job and trucked to the casting site where a front-end loader or a Lima crane handling a concrete bucket places the mix in the forms. The surface is trowelled smooth, and the canopy is allowed to cure for seven days before forms are stripped.

The dolly then goes to work. Designed specifically for the job, the rig measures 15x35 ft and stands 9 ft high above axles.

A pair of sheaves is suspended from the ends of each upper cross bar that braces the dolly. Each pair carries a length of steel cable, the ends of which dangle from the sheaves. Each cable end suspends a hand-operated, sixton Chisholm-Moore puller hoist.

A Caterpillar D6 pulls the rig into position over a canopy. The hoist hooks are lowered and fastened to each corner of the canopy. The hoists lift the canopy free of the forms. (Steel cables running over the sheaves equalize side strain on the concrete and prevent its buckling or bellyingin.)

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The tractor then pulls the dolly carrying the canopy to storage or to the erection site. There, the member is lowered to the ground and a Lima 50-ton crane lifts and sets it into position.

Vic Shroeder, project manager, says the block and cable system equalizes the strain on the sparsely reinforced concrete. Lifting the canopies at four corners with the dolly prevents damage to the member. Harry Shaw is superintendent for all concrete construction. He's also responsible for many of the job innovations.

## Make a Dolly



CANOPIES—Precast concrete canopies 12½ ft wide and up to 26½ ft long are cast on plywood forms set over 6-ft-high frames of Patent's tubular steel scaffolding

#### Clever Ideas Show Up Throughout Job

Here are four other smart ideas at work on the job.

◆ All concrete for the project is batched in a contractor-built 40-yph plant set up on the site. Built into the plant are Chain-Belt bucket and screw conveyors and an Ingersoll-Rand 30-fpm 175-psi air compressor. Conveyors run off U.S. Uniclosed motors through Dodge speed reducers. Hardy beam scales weigh aggregates, sand, and cement; a 2-in. Neptune meter measures water. Concrete is a 3,000-psi lightweight mix containing Darex and WRDA, air-entraining and water-reducing agents.

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## RUBBER-TIRED DOLLY . . . continued

● A job-built car-puller enables the contractor to charge the batch plant directly from railroad cars that come to the site over a 95-ft siding from a main track. The winch pulls the cars from the main track to the plant.

It consists of a 7½-hp Howell electric motor, mounted on a 1936 Ford truck transmission, that powers a Tulsa winch salvaged from an old Army 6x6 truck. All of the machinery is mounted on an old truck frame.

A cable runs off the rig to a deadman, a tripod of angle irons welded together and anchored in concrete. A snatch block on the deadman angles the cable off to the railroad car. The rig cost only \$275 to build; it can pull 10 empty cars up a 1% grade of track.

● A folded plate canopy roof was designed for a walkway between two buildings. The contractor sprays this concrete into the forms. A large mixer at basement level supplies a topside crew with a yard of concrete every 2½ min. A two-man crew sprays the concrete over a lath of light reinforcing mesh. This is allowed to dry. Then, subsequent layers are sprayed over the first one until the concrete reaches specified thickness.





● Real work horse on the Lenox job is a 1-ton Lull Hi-Lift heavy duty truck fitted with a 32-ft boom and a bucket fashioned from two Army surplus jeep trailers welded together. The Lull swings mortar and masonry up to workmen on the building. The rig also handles a straight lift-hook and a fork lift.

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fellpoints on 1 side perform unusual feat in coarse sand...

## Dry 18-ft Deep Trench at 3,700-ft Elevation

the reduced atmospheric pressure of 2/3-mile above sea vel, any pump works at a handicap. To compound this oblem, the contractor desired to install his wellpoint system Griffin system) at ground level. Previous wellpoint practice the area was to place the system on a berm nearer subgrade cause of pump lift limitations.

Question: in coarse water-bearing sand near the Rio

Grande River, with discharge lines as long as 700 ft at times, could the necessary 18 ft lift be attained by a wellpoint system installed on only one side?

• Based on previous local experience it did not seem feasible, but events proved otherwise. Dry conditions were successfully maintained from the start, enabling T. N. O'Kelley to beat his 100-day time limit by 40 days.

## GRIFFIN WELLPOINT CORP.

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GENERAL OFFICE: 881 East 141st St., New York 54, N. Y.

Branches: Jacksonville, Fla. • West Palm Beach, Fla. • New York, N. Y. • Hammond, Ind. • Houston, Tex. In Canada: Construction Equipment Co., Ltd., Toronto • Montreal • Edmonton • Vancouver In Venezuela: Drew Bear & Sons C.A., Caracas • Maracaibo





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\*PROJECT PAYDIRT: Caterpillar's multimillion-dollar research and development program to meet the continuous challenge of the greatest construction era in history with the most productive earthmoving machines ever developed.

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By any comparison the new Cat D7 Series D Tractor is champ in its class. It packs 140 horsepower... matched with 80% more lugging ability than the previous model for greater production. And it delivers this production with lower operating and maintenance costs. The payoff is increased money-making performance on your job—performance that no other tractor in its power range can match!

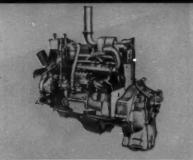
Major improvements, developed by Caterpillar's Project Paydirt, account for the increased capacity of the new D7. These improvements affect the engine, power train and undercarriage. They're explained in detail on the right.

Along with the new features, the best of the time-tested features of the Series C model have been retained. One of many examples: the exclusive Caterpillar oil clutch, which delivers up to 2,000 hours—one whole season—without adjustment!

For complete facts about the leader in this class, see your Caterpillar Dealer. He's ready to give you the whole story about the new D7 Series D, as well as other achievements of Project Paydirt. He'll be glad to demonstrate, too, for this D7 really shines—in action. Say when and where—he'll be there!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.





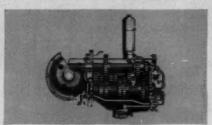
NEW TURBOCHARGED ENGINE. 140 flywheel horsepower ... 112 drawbar horsepower make the new D7 even more productive. In-seat starting is available as an attachment. And in addition to the 9% horsepower increase, the new Turbocharged Cat Engine offers 80% more tractor lugging ability. The payoff: greater capacity to lug against big loads without stalling — for higher production, greater operating economy.



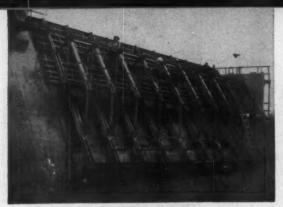
NEW BRY-TYPE AIR CLEANER. Pioneered by Caterpillar, this new dry-type air cleaner uses cyclone tubes and cellulose filter element to remove at least 99.8% of all dirt and dust from engine intake air — during every operating hour, even under the most severe operating conditions. Filter element can be cleaned and re-used. Cleaner can be serviced in 5 minutes. The payoff: longer engine life, greater economy, less maintenance.



SERVICE-FREE TRACK ROLLERS. New lifetime lubricated track rollers, carrier rollers and idlers on the undercarriage are protected by exclusive Caterpillar floating-ring seals. They need no lubrication until rebuilding, eliminate on-the-job roller lubrication. In addition, track roller life is increased by improved load-carrying design. The payoffs greater economy, longer life, less maintenance.



PRESSURE-LUBRICATED TRANSMISSION. Transmission, bevel gear and pinion are now pressure lubricated with full-flow filtered oil, another development of Caterpillar's research program Project Paydirt. And new power train components, provided to transmit greater horsepower, feature a major increase in strength in the final drive gears. The payoff: longer lived gears and bearings for trouble-free operatiom.



71/2-Ft Concrete Pours



**Steam-Cooled Aggregates** 

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## Hartwell Dam — It's a Methods





#### **Two-in-One Aggregate Plant**

## howcase

By ANDREW BORACCI Associate Editor

YOU MAY NOT see it at first.

You stand atop a bluff and look down on the murky, slow-moving Savannah River. You see a gleaming white concrete structure that stretches 1,900 ft to the South Carolina shore. It doesn't look very big as dams go. Nearly completed blocks rise only 204 ft above the river bed. But some thing about the construction catches your eye. Then you realize what it is. They're placing mass concrete in unusually high

The lifts at Hartwell Dam are 7½ ft. That's rare on gravity dams in the United States. The last

Hartwell Dam Contractors go all out to make this \$22-million, multi-purpose Corps of Engineers structure on the Savannah River a marvel of modern dam construction

time it was tried was on Table Rock Dam over the White River in Missouri. Normally, you pour gravity blocks in 5-ft lifts. Go above that, you ask for trouble.

You need sturdy forms to retain the concrete. You need an effi-cient method for cooling aggregates and water to insure control of concrete temperatures. And you need a highly efficient quarry and aggregates production plant to meet big concrete demands.

You check on how these needs are being met by Hartwell Dam Contractors, a joint venture sponsored by Guy F. Atkinson Co. of San Francisco, with Soo Construction Co. of Winona, Minn., and Ostrander Construction Co. of Portland, Ore. The answers show

up this \$22-million Army Engineers dam for what it is-a construction methods showcase.

To make possible these 71/4-ft pours, the contractors:

- · Retain concrete with a new cantilevered steel form.
- · Cool aggregates, sand, and water with a unique jet steam vacuum process.
- · Add fly ash to the cement to help cut hydration heat.
- Pull 18,000 yd of rock per shot from their quarry.
- · Churn out stone and sand in a two-in-one, fully automatic, 500-tph aggregates plant.

Follow the operations step by step and see how the techniques contribute to the high production.

continued on next page



18,000 Yd of Rock per Shot

HARTWELL DAM . . .

## At the Quarry ...

# Shot a Week Produces 18,000 Yd of Rock

The quarry is 1½ mi from the dam site. You're greeted with a loud, thudding blast. A mass of rock lifts into the air, then falls back to the ground. Some 18,000 yd of granite are ready for processing.

The pile looks well fractured, but it disappoints the blast foreman. There are too many oversized boulders. The primary crusher can't take stones over 3 ft. Larger ones have to be plugand-feathered down to size.

You learn that poor fragmentation has been troublesome from the start. Blasting crews have tried a lot of patterns and loadings. Best fragmentation, so far, has come from the present 5½x 5½-ft pattern.

Four Gardner-Denver Air Trac drills and three Gardner-Denver wagon drills send down 600 holes of 2¼-in. dia to depths of 24 ft. Drilling is with Atlas Copco carbide bits fitted to two 12-ft G-D or Breunner-Lay steels. Gardner-Denver compressors supply the air.

Most successful loading so far is a little more than a pound of 40% gelatine dynamite for each yard of rock to be pulled. Detonation is by electric blasting caps of different makes; each shot goes off in 12 millisecond delays.

Despite problems of secondary drilling, production is outstanding. Crews working two shifts daily manage a shot a week, and each shot produces the 18,000-yd quota. The quarry will yield 1,000,000 yd before the job is finished.

A Bucyrus-Erie 110-B electric shovel with a 5-yd dipper and a 54-B with a 2½-yd bucket load fractured rock into a small fleet of 15-yd, 22-ton Euclid rear dumps for haul to the aggregates plant. You follow the trucks.

continued on page 98



CLEANING—Air jet removes rock grindings from bottom of 21/4-in.-dia blast hole.



BREAKING—Workman with G-D jackhammer drills to plug and feather oversize rock.

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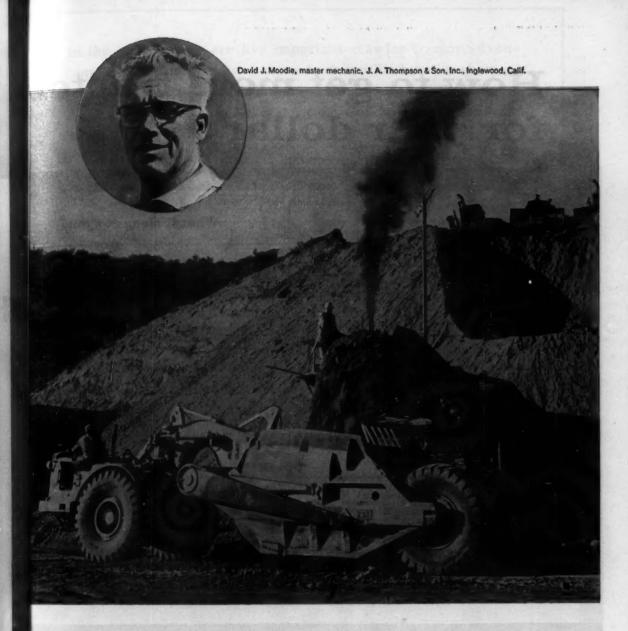
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LOADING-Bucyrus-Erie 110-B electric shovel loads rock into Euclid 15-yd rear dump truck.



## with UNION...never a lubrication failure

"We've serviced all our major equipment (about 250 units) with Union Oil products since 1948 and have never had a failure due to lubrication.

"Union's Guardol Motor Oil is giving us what we consider to be very good 'Cat' life - 5 to 6 thousand hours between kit overhauls on D8s and 9s, and 4½ to 5 thousand on DW20s and 21s. Union's T5X is the motor oil of our choice for our Ford and International trucks."

Dave Moodie's report is typical—Union lubricants are extending the life and improving the performance of thousands of pieces of construction equipment every day in every part of America and overseas. Try Union Oil products in your equipment and you'll see why so many of the nation's most important contractors use them exclusively. Ask your Union Oil Company representative for specific lubrication recommendations on any type of equipment or write to Manager of Direct Sales.

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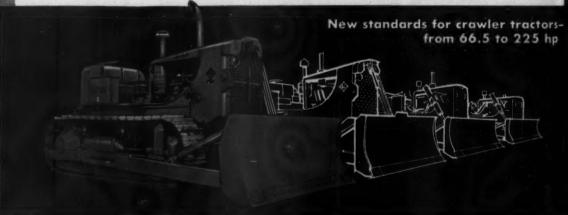
Union Oil Center, Los Angeles 17, California, U.S.A.

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# How to get more tractor for your dollar

Power train protection Better equipment mounting Better weight distribution  No more wasted time greasing these track components  Matches power to load automatically Transmits power smoothly Less shifting					
			More clearance Longer gear life		
			Faster service Easier access to all major assemblis		

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move ahead with ALLIS-CHALMER

In the chart below are five important crawler tractor advantages. These features have earned recognition by all makers of crawler tractors—one or more are now included in their latest designs. It stands to reason that the more of them you get on your next crawler, the more it is worth to you.

#### Where you get it

Allis-Chalmers is the only manufacturer offering main frames in all models. Two other manufacturers now offer them in one model.

Allis-Chalmers is the only manufacturer offering permanent lubrication of truck wheels, idlers and support rollers on *all* models. One other manufacturer offers permanent lubrication on three models.

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orshp Allis-Chalmers pioneered it in crawler tractors in 1940 . . . offers it in two tractor shovel models, two tractor models. All other major manufacturers now offer it as optional equipment in one or more models.

Allis-Chalmers is the only manufacturer offering double reduction final drives on all models. One other manufacturer offers it on three models.

Allis-Chalmers is the only manufacturer offering true unit construction in *all* its nodels. Two other manufacturers now offer modified unit construction in part of their lines.

Here's proof that other manufacturers of crawler tractors have chosen to "follow the leader" with Allis-Chalmers engineering ... and that your Allis-Chalmers dealer is the man to see for top value in crawler tractors. He'll be glad to demonstrate the model of your choice. It will have more industry-approved advantages than any other unit near its size. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

power for a growing world





PRIMARY—Euclid rear dump drops 3-ft rock into Allis-Chalmers 42x5 gyratory.



SCREEN — Tyler double-deck vibrating screen scalps 6-in, stone from small sizes.

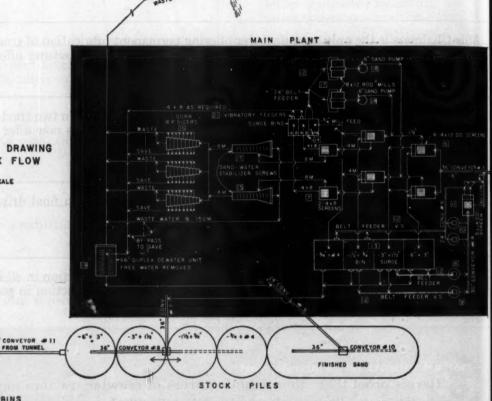


SURGE—All stone moves from raw surge to main plant for further processing.

# At the Crushing Plant . . .

SCHEMATIC DRAWING OF ROCK FLOW

HO SCALE



You watch the haul trucks move up a slightly inclined ramp and dump into a hopper that feeds the rock to a 42x65 Allis-Chalmers 500-tph gyratory crusher. That's the starting point for a highly efficient two-in-one aggregates plant.

TRUCK-LOADING BINS

It's a plant capable of: (1) manufacturing and stockpiling four sizes of stone and a variety of sands; and (2) temporarily storing a quantity of all sizes except the fine sands so they can be backed up and recrushed to smaller sizes, if needed. All plant activity, too, is automatic.

Rock tumbles from the primary in raw sizes onto a 36-in. conveyor that carries it up to a 6x24 Tyler 800 double-deck screen. All 6-in. stone passes through the screens onto a 36-in. conveyor that carries it to a 5,000-ton raw

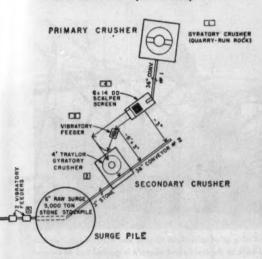
surge pile. The -6+3-in, material moves one of two ways depending on where it is needed.

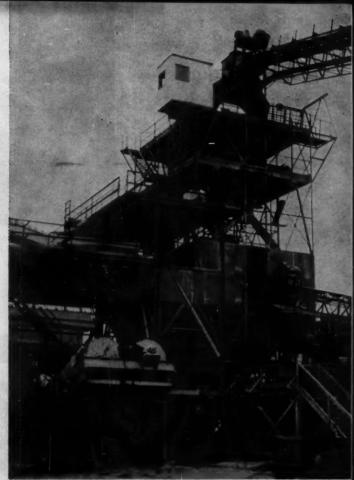
It can move onto a 30x42 vibratory feed that sends it to a 36-in. belt which, in turn, runs it to raw surge. Or it can move onto a belt that it carries it to a 4-ft Traylor secondary gyratory crusher for further breaking down.

Discharge from the secondary



STOCKPILE—Belt from main plant transfers stone to shuttle conveyor over stockpile.





THE MAIN PLANT—Work horse of aggregates scheme is the main plant. Plant grades, crushes, recrushes stone as needed, and produces sand.

#### PLANT EQUIPMENT

crusher is -3-in. size. This goes onto a belt that carries the material to the raw surge pile. The surge temporarily stores everything from sand to -6-in. stone.

Two 42x60 vibratory feeders under the surge pile transfer raw material onto a 36-in. conveyor that carries it up through a 4-ft corrugated steel reclaiming tunnel to two 4x12 Symons doubledeck screens that separate raw

surge into four sizes of aggregates.

Sizes -6 in. and  $-3+1\frac{1}{2}$  in. go directly to two 67-yd bin surges. The  $-1\frac{1}{2}$ -in. stone enters a second pair of  $4\times12$  Symons double-deck screens. These separate the  $-1\frac{1}{2}+\frac{1}{4}$ -in. stone from the  $-\frac{3}{4}+4$  mesh grit. The  $-1\frac{1}{2}+\frac{3}{4}$ -in. stone passes into a third 67-yd bin surge while the  $-\frac{3}{4}+4$  mesh carries into a fourth bin surge.

Each bin discharges directly onto a conveyor that leads to a trestle-mounted shuttle conveyor over four finished storage piles. The shuttle conveyor places different sizes of stone onto the specified graded storage pile.

Material that leaves the second set of screens moves into a third set of 4x8 Symons double-deck screens for further grading and passage either to sand processing or to the grit bins.

Sizes under ¾+4 mesh and 4+8 mesh pass into sand surge bins. Sizes under 8 mesh continue on through the sand processing plant. These -8 mesh materials pass first through two 48-in.

Wemco screw classifiers that remove excess water and fines and carry them to a waste pit.

Remaining materials pass into three Dorr eight-panel sizers that remove additional waste and separate -8 mesh sand into eight finer grades. Sand coming from the sizers, as well as -4 mesh sizes in the sand surge, move into a 66-in. Wemco duplex dewatering unit. From there sand moves onto a 24-in. conveyor to a finished sand storage pile.

So far, you've seen what can be called an adequate high quantity aggregates plant in itself. But added to the plant is a series of feeds, belts, chutes, and secondary crushers that take various sizes of material from bin surges and feed them back for crushing into smaller sizes as desired.

Here's how the secondary plant works.

Sizes -6+3 in. and -3+1½ in. can be fed back to a 4-ft Symons standard cone crusher. A 4-ft Symons short-head cone also can

## Plant Produces Eight Sand Sizes

be fed  $-3+1\frac{1}{2}$ -in. material as well as size  $-1\frac{1}{2}+\frac{3}{4}$ . Material from the  $-1\frac{1}{2}+\frac{3}{4}$ -in. and the  $-\frac{3}{4}+4$  mesh bins can be sent back for regrinding through two 3-ft Symons short-head cone crushers.

Output of all four crushers passes through a 5x14 Allis-Chalmers double-deck screen for regrading. From the screen all material drops onto the 36-in. conveyor that leads to the main plant from the raw surge pile. This conveyor drops the material through the main plant's first set of screens where grading again gets under way. Material leaving the screens returns either to the aggregates surge bins or is sent on to finished storage.

At the three sand surge bins something similar happens. All output from the -4+8 mesh sand in two of the bins goes directly to the dewatering unit and from there to finished storage. But all of the 34+4 mesh grit, and as much as is needed from one of the -4+8 mesh bins, can be run through two 8x12 Marcy rod mills that grind the material further.

Two 6-in. Wemco sand pumps move sand from the rod mills to the second pair of 4x8 Symons double-deck screens in the main plant. The screens separate -\frac{3}{4}+4 mesh sand (it returns to the sand surge bins) and -4 mesh sand (it shuttles through a third set of screens in the main plant).

The third set of screen returns -4+8 mesh material to the sand surge bins. The -8 mesh sand passes through the screw classifiers, sizers, dewatering unit to finished sand storage.

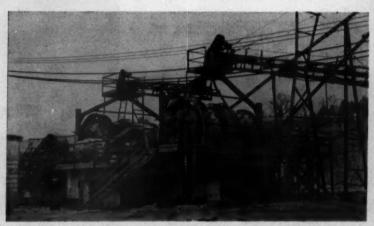
Syntron feeders under each finished storage pile drop material as it is needed onto a 36-in. conveyor that travels through a corrugated steel reclaiming tunnel to two 50-yd storage bins.

One of the bins stores aggregates; the other stores sand. These bins discharge into International Harvester drawn 20-yd dual bottom-dump aggregate semi-trailers designed by the contractors. These haul aggregates to the cooling plant 1½ mi away. And that's where you go next.

continued on page 104



SCREW CLASSIFIERS—Sand passes through two Wemco screw classifiers that remove water and fines then pass sand through four Dorr eight-panel sizing tanks for grading.



ROD MILLS—Two 8x12 Marcy rod mills grind grits down to sand and dump it into two 6-in.
Wemco pumps that move the sand back to the main plant where it is graded and dewatered.



STORAGE BINS—Reclaiming belt dumps sand and aggregates into two 50-ton bins that load material through air-actuated gates into 20-yd semi-trailer drawn by I-H tractor.

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## Heavy Construction Operators

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says William R. Collins, V.P. William Collins and Sons, Fargo, N.D.

"We switched to Ford trucks in 1951 because we found we could haul 1½ tons more per trip. Now we have 124 Fords, including 80 T-700's. They're economical to operate, too—we get up to 6 miles per gallon. Our drivers like Ford's power steering and peppy 302 HD V-8 engine. We like Fords because we know we can always get Ford parts quickly if we need them. That means our trucks aren't down over one day, even on a major overhaul."

#### "We trade every two years and find that Ford trucks bring highest resale price"

says John McCormick, Sec.-Treas. NorthernImprovementCo.,Fargo,N.D.

"We keep our Ford T-700's in top condition year round, and it pays off. We get a higher resale price when we trade every two years. Fords have the ability to perform under the rugged conditions in our work. Power steering on our tandem dumps makes them easy to handle on-or off-the road.

## "Our drivers like Ford's power... they get heavy loads under way fast"

says George C. Wilson, General Superintendent Schultz and Lindsay Construction Co., Fargo, N. D.

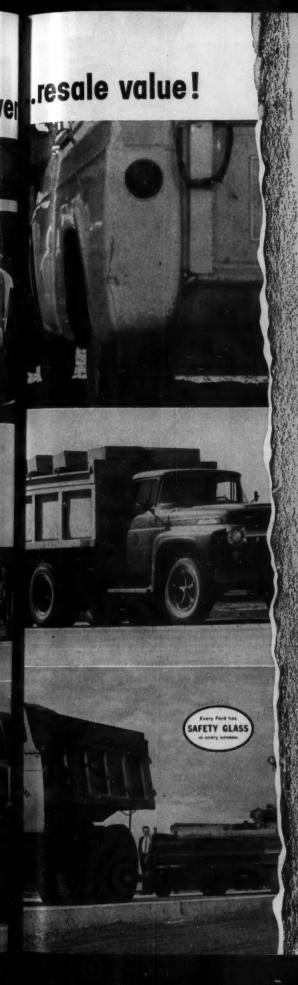
"Ford's HD power in our T-750's gets heavy loads under way fast . . . helps keep us on schedule. And we can haul bigger payloads doing it . . . up to a yard more, legally, every trip. We've never had frame trouble either. They're rugged, durable trucks and if we ever need Ford parts, we can always get them at the nearest town."

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Detroit \$1, Michigan

# `59 Ford Pickups Win Economy Showdown U.S.A.

## -average 25.2% better gas mileage!

Impartial tests of the 1959 pickup models of all six makes prove conclusively that Ford's 3-ton pickups equipped with Short Stroke Sixes are the economy champs for '59.

#### HOW TESTS WERE MADE

Standard six-cylinder models of the six leading half-ton pickups first were put through exhaustive road trials. All '59 trucks—Ford and competitive—were bought from dealers, just as you would buy them. After at least 600 miles break-in, all were brought up to manufacturer's recommended specifications.

The trucks were then tested — by America's leading independent automotive testing firm—at constant speeds of 30, 45 and 60 miles an hour. Next came stop-and-go tests, ranging from moderate city traffic to normal retail delivery operation. Acceleration rates were carefully timed in each gear to insure accurate results for all makes.

HOW NEW '59 SIXES RATE IN GAS MILEAGE							
'59 FORD SIXES GIVE	25.2% more miles per gallon than Make	per gallon	more miles	more miles per gallon than Make	more miles per gallon than Make	more miles	

The '59 Ford Sixes, in every test, averaged more miles per gallon than every other make! Combining all tests, the '59 Fords led the average of all other '59 pickups by 25.2%.

#### WHAT'S THE SECRET?

How can a '59 Ford Six make four gallons do the work of five in other trucks?

First, of all pickup Sixes, only Ford has modern Short Stroke design. This new type of engine is basically far more efficient than long-stroke Sixes of other pickups. Example: Ford's Six delivers more usable horsepower than any other pickup Six.

Second, to this modern engine Ford has added a new economy carburetor. By metering fuel more precisely in both low-and high-speed ranges, Ford's new carburetor boosts gasoline mileage in every type of driving. And Ford's Economy Carburetor is standard at no extra cost.

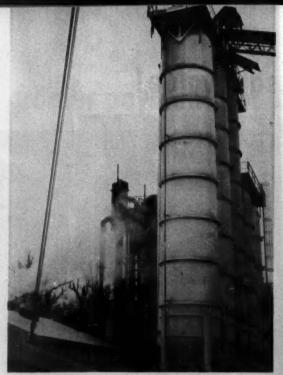
Your Ford Dealer now has the complete report of Economy Showdown U.S.A. Why not call or visit him today and get the whole story firsthand?

## At the Cooling Plant . . .

## Boiling Water Cools Aggregates



BOILERS—Two Cleaver-Brooks natural-gas-fired boilers make steam for the aggregate cooling operation at rate of 17,000 lb per hour.



COOLING PLANT—Aggregates and sand cool when water surrounding each particle boils off in a low vacuum in the steel silos.

You find only one word to describe the aggregates cooling process—unique.

It involves boiling off the water around each aggregate particle in a jet-steam, compressor-induced vacuum. The vacuum lowers the boiling point of the water. Heat from the aggregates promotes the boiling. And rapid evaporation of the water lowers the temperature of the aggregates to a specified degree.

It's something like boiling water high on a mountain top. Water boils in the rarified atmosphere at a temperature considerably lower than at sea level. Yet, while the water boils, you can dip your hand into it and feel little heat.

Aggregate cooling takes place in five steel silos. Three 200-yd silos handle aggregates, and two 80-yd silos cool the sand.

Each silo is built with a feed trap at the top and a discharge trap at the bottom. A steel pipe runs down alongside each silo and connects to it by four lateral pipes. Fitted to each vertical pipe is a venturi tube to induce the cooling vacuum.

The 20-yd haul trucks carrying aggregates containing 2 to 3% water by weight, move up to the cooling plant and discharge into a hopper. The hopper feeds a con-

veyor that carries the stone to the top of the cooling silos. Aggregates move into the silo in the same size ratio as they will go into the concrete mix.

When silos are full, traps at top and bottom are sealed. The steam nozzle of a priming jet in the venturi then is turned on for 3 to 5 min. The steam comes from two Cleaver-Brooks, natural-gasfired boilers, each of which delivers 17,000 lb hourly.

The steam passes through the venturi tube, creating a vacuum that draws air and non-condensible vapors from inside the silos. Pressure inside the containers goes down by the end of the priming cycle to equal that of water vapor having the same temperature as the aggregates. (For example, if the aggregate temperature and entrained water temperatures are 80 deg, vapor pressure at this temperature is 1.032 in. of mercury.)

When that point is reached, the priming jet is turned off and its companion main steam evactor jet in the venturi is turned on. The evactor jet nozzle delivers a high velocity steam to a combining chamber in the venturi where it meets slow moving water vapor from the cooling silos. The mixture passes under pressure through a booster in the venturi

where a large part of the velocity head changes into a pressure head. This creates and maintains a low vacuum in the silos.

Pressure drops to 0.247 in. of mercury. At this point water will boil at a temperature of 40 deg, provided some source of heat is present to promote the boiling. The source of heat comes from the aggregates. They enter the plant at temperatures ranging from 70 deg to 110 deg during summer months.

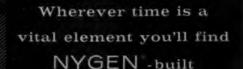
#### **Water Boils**

Aggregate heat boils off the water enveloping each particle and causes it to evaporate at 40 deg. This continues until the heat source is exhausted or until the temperature of the aggregates is reduced to 40 deg. The water serves as the refrigerant.

The cooling process takes about 45 min. At the end of the cycle aggregates pass through the bottom silo discharge traps and onto a conveyor that carries them up to the batch plant. The conveyor is covered with a corrugated steel hood to keep the sun from the cool aggregates during their ride to batching.

You follow the aggregates to the batch plant.

continued on page 107



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and stamina that's
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SOUTH BEND DIVISION

**CURTISS-WRIGHT** 

CORPORATION SOUTH BEND, INDIANA

#### HARTWELL DAM . . .

From the covered conveyor, aggregates dump into a standard C. S. Johnson fully automatic 320-yph batch plant. They pass through four screens that channel four different sizes of stone and sand into separate hoppers.

Sizes going into the hoppers are 6-in. cobbles, 3, 1½, and ¾-in. stone, and sand. A sixth bin stores portland cement and fly ash. This bin has a steel divider. About 60 lb of fly ash is mixed to 1¾ bags of cement.

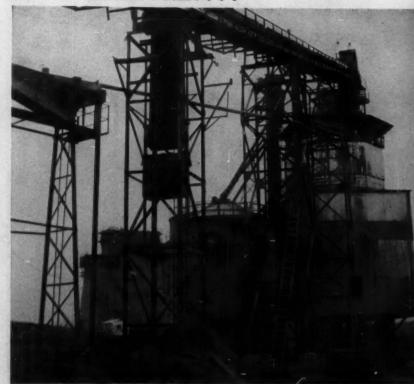
Fly ash is added to the mix primarily to lower cement costs. Job engineers explain it's a cementatious material and does not greatly reduce the strength of the concrete, but it does help cut down on the heat generated by chemical action in the concrete. The 1,500-psi concrete cannot be placed when its temperature exceeds 55 deg.

The fly ash-cement mixture enters the plant by elevator that takes the material from a special storage silo alongside the plant.

Aggregates are weighed, batched, and mixed in four Koehring 4-yd tilting mixers that discharge directly into a wet-batch hopper with an air-actuated gate.

continued on next page

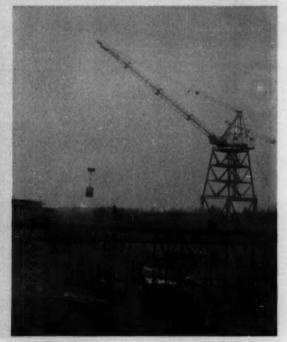
#### At the Batch Plant ...



BATCHING—Covered conveyor carries cooled aggregates to standard C. S. Johnson 320-yph batch plant that mixes the batches in four 4-yd Koehring tilting mixers.

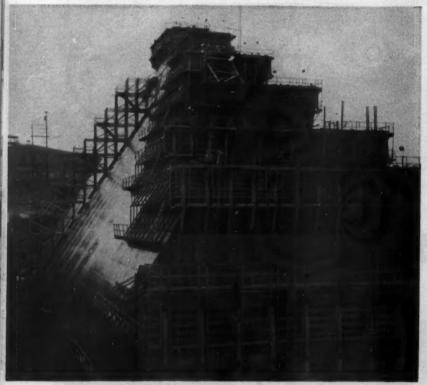


HAULING—General Electric diesel-electric locomotive pulls car carrying four 4-yd buckets from plant to work trestle over dam.

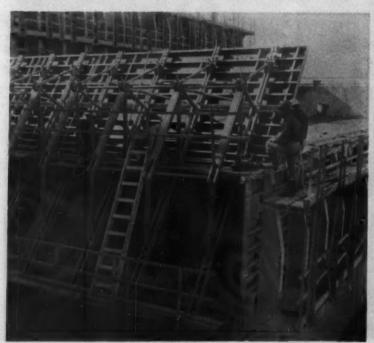


HANDLING—One of two American Revolver R25 electric gantries on trestle lowers a concrete bucket to crews working inside forms.

#### **Cantilevered Forms Retain Concrete**



THE FORMS—Blaw-Knox's face and bulkhead forms work together to make possible pouring of concrete in 7½-ft lifts. It's only second job where technique has been tried.



UP CLOSE—Face forms feature hinged upper half that moves back out of way of bucket concreting lower half of lift. Bulkhead form features bucket-deflecting strongbacks.

The hopper discharges concrete into four 4-yd bottom dump buckets set on a railroad car pulled by a 150-hp General Electric diesel electric locomotive. This rides a standard gage track onto a construction trestle that spans the river just below the dam's downstream face. The buckets are handled by two American Revolver R25 rail-riding electric gantries with 30-ton capacities at minimum boom radius.

The stage, at this point, is set for concreting of the 7½-ft lifts. You follow a locomotive to the dam site.

#### Three Types of Forms

At the dam site the first thing you see are the 7½-ft cantilevered steel forms. They're marvels of efficiency. And they are firsts in the field—both for Blaw-Knox who manufactured them and for dam contractors in general.

Three form types are in operation at Hartwell. They are: (1) a 7½-ft cantilevered hinged form for the dam faces; (2) a concrete-bucket - deflecting cantilevered bulkhead form; and (3) a special spillway form that adjusts to the curvature of the spillway face.

Blaw-Knox made the forms in 20-ft and 8-ft widths so they could be joined in gangs for pouring of 48 and 68-ft-wide blocks. This ganging helps make possible joint-free surfaces on the dam face. It also eases handling of the forms. A 20-ft section weighs 10 tons.

Face forms are supported on 14-ft-long strongbacks bolted at their bottoms with Williams 1%in. she-bolts to 1-in. pigtails imbedded in face concrete just below the lift being poured. The form face is hinged at the 3%-ft point. This permits moving the upper half of the form out of the way to allow the concrete bucket to work close inside the lower form half's inner face. Slots are provided in the form through which bolts that will secure forms for the next pour can be imbedded in the concrete during concreting operations.

To move both face and bulkhead forms upward, bolts first are loosened. The gantries working on the trestle pull the forms upward where they are rebolted. continued on page 110



"They're really doing a good job," reports Victor Holzinger,
Master Mechanic of The Gaskill Construction Co. of Riverton, N. J.

"We used to put about 3000 hours on our six earth movers before they were pulled into the shop for an engine overhaul. Now, since we installed FRAM Air Filters, about a year ago, we're logging over 6000 hours. What's more, we've been able to chop about half an hour off our daily maintenance, too. We're very well satisfied with FRAM Air Filters... and are equipping all of our off-the-highway vehicles with FRAM Filters."

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#### HARTWELL DAM . . .

Bulkhead forms feature bucket-deflecting strongbacks. These are web girders tapered at each end to bounce off a menacing concrete bucket without damaging bucket or form. Upper and lower work platforms come with the forms. These collapse upward.

The spillway forms adjust to the curve of the dam face. They curve both for concave and convex surfaces. A series of screw jacks built into the form makes the adjustments to the form face,



PLACING-Concrete goes down in 20-in. stair-like layers. This is done to help workmen thoroughly vibrate and consolidate the stiff mix that contains aggregates up to 6 in.

which is suspended from strongbacks with a buggy-spring assem-

bly. Concrete, placed with the gantries, goes down in 20-in. steplike layers. Each layer is vibrated to consolidate the cobble-type concrete. At the close of a lift pour, concrete is cured with a water spray for a minimum of 36 hr before forms are moved up.

To provide bond between lifts. laitence is removed from the block surface with wire brushes and an air-water jet spray. Water and air are brought up to working level by a pair of steel pipes vertically imbedded in the concrete. Sections are added to these as the dam goes up. One pipe is fitted with a high pressure water pump while the other is fitted with a control gage for compressed air. Each pair of pipes services two adjacent blocks.

Before a new pour, the surface of the lift is thoroughly cleaned with a water jet and the surface is broomed with a fine grout.

That's the complete construction methods showcase. You can judge how effective these techniques are from just one fact-the contractors estimate it would have taken them about one-third longer to build the dam in 5-ft lifts.

#### Men on the Job

For Hartwell Dam Contractors, Vern R. Bradley is project manager; Leo P. Jennett is assistant project manager; Richard F. Byers is project engineer; and William Beuhler is general superintendent. Charles A. Jackson is resident engineer for the Savannah District, U.S. Army Corps of Engineers. Col. R. C. Bahr is district engineer.



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World's Largest Builders of Heavy-Duty Air-Cooled Engines



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If you want to cut down on your own work, if you want to accomplish more in a given time, you should try Stoody Semi-Automatic Hard-Facing!

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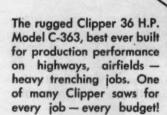
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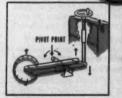
outdid themselves with Dual

Balance Design—which simply means that this Big Saw is so perfectly balanced that

one man can easily handle it.

The engine weight is over the blade, preventing blade "rideout". It's easier to use than any other saw—another reason why 4 out of 5 Buy

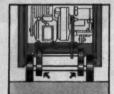




Only the most accurate blade feed was good enough for us, so we originated Ball Bearing Positive Screw Feed ... which gives you positive control of the blade at all times ... and enables you to keep abrasive blades at the proper cutting depth as they diminish in diameter. No other method ... not even hydraulic ... gives such complete blade protection.



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Page 112 - CONSTRUCTION METHODS and Equipment - April 1959



New Gateway to the West—This 8-lane bridge at Pittsburgh's Point was designed by Richardson-Gordon and Associates, Pittsburgh, Pa. It combines a steel arch with Tiger Brand Wire Rope suspenders.

## USS Tiger Brand — America's No. 1 Wire Rope supports Pittsburgh's new bridge

THE new double-deck Fort Pitt Bridge spans the Monongahela River and connects the Golden Triangle with a double-deck tunnel under Mt. Washington. This eliminates a serious traffic bottleneck—permits Lincoln and William Penn highway traffic to cross Pittsburgh in half an hour without stopping for traffic lights.

The new bridge is unique in design. It is a double-deck, tied-arch span, 752 feet long. Two 4-lane roadways are supported by 112 prestressed USS Tiger Brand suspender ropes, each 3¼ inches in diameter. A total of 8960 feet of suspender rope was used in the bridge.

Why Tiger Brand is your best buy

- It is made by a company that maintains the most complete wire rope research and manufacturing facilities in the country.
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- 3. Every type of Tiger Brand Wire Rope is designed for specific applications. You get the right rope for the job.
- It is made by one Company, U. S. Steel, and every step of production, from one to finished product, is carefully controlled and supervised to guarantee one high standard of quality.
- 5. Tiger Brand Wire Rope is manufactured by the largest single producer in the country.

For information, write American Steel & Wire, 614 Superior Ave., N.W., Cleveland 13, Ohio.

USS and Tiger Brand are registered trademarks



USS Tiger Brand Wire Rope was used on all the cranes that did the heavy lifting.

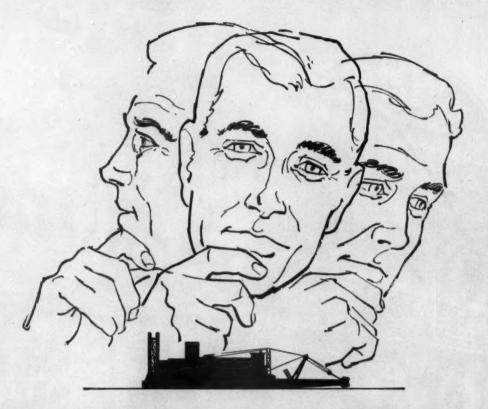
## American Steel & Wire Division of



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Tennessee Coal & Iron Division, Fairfield, Ala., Southern Distributors - United States Steel Export Company, Distributors Abroad



#### Checklist for Dredge Selection

Successful dredging operations require efficient use of time and labor, avoidance of downtime, and all-around capability of a dredge backed up by a builder of recognized merit.

Before you buy a dredge, be certain that the builder qualifies on all of the following points. You must be assured that he has complete responsibility for the performance of your equipment.

Is the dredge a 100% unified machine, designed and built by a single engineering source?	ELLICOTT	BUILDER A	BUILDER B
Does the builder integrate all the parts into a balanced construction tool?	1		
Can he assure the performance potential of the completed dredge?	1		
Are his equipment recommendations based on, your specific job requirements?	1		
Is he willing to take complete responsibility for field performance?	1	. 1-3	

Come to Ellicott first for real evaluation of the factors you must consider—in your own interest—to insure a sound investment in the dredge best suited to your needs.

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Successors to the floating dredge business of the Bucyrus-Erie Co. and the American Steel Dredge Co. Complete engineering sales and repair parts service.

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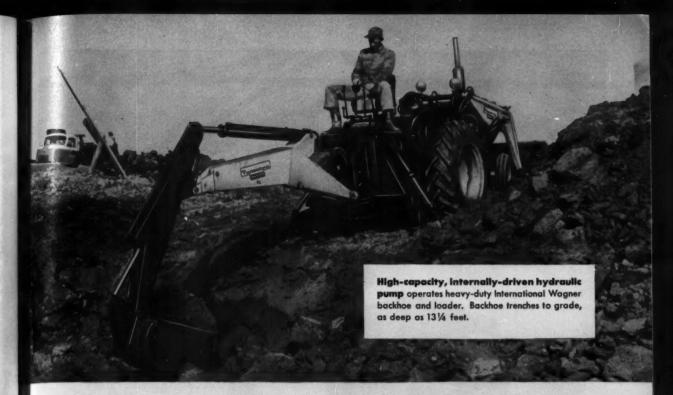
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#### THE HUSKY NEW INTERNATIONAL 460 UTILITY DELIVERS

## real bite at the backhoe bucket!

What a power house for high capacity trenching and oading!—look at the score card:

ypical operating weight of 5,015 pounds\*—3,185 on he rear wheels—means built-in brawn that lets the big backhoe cylinders go all-out to bite fast and clean n tough-to-dig materials. It means built-in stamina for less downtime, higher production, lower cost per subject yard of materials handled!

hen add new Multi-Range 6-cylinder power—gasoine, Diesel, or LP Gas—to this built-in brawn...you tep into a new world of utility tractor performance!

With 175-lb operator, but no added weight or mounted equipment.

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Ask your IH Dealer to demonstrate the 61 hpt 460 Utility, or the other 5 sizes in the International line, 12.8 to 90 bare engine hpt. For name of IH dealer and new catalog, write International Harvester Company, Dept. CME4, P.O. Box 7333, Chicago 80, Illinois.

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## Carts Take the Risk Out of Cable Moving Job

There's considerable risk in moving a duct containing 42 telephone cables. A slight kink in one of the wires might lead to a serious break. But it's much cheaper and faster than building a new duct.

MOVING an underground duct structure containing telephone cables without interrupting service is a delicate operation.

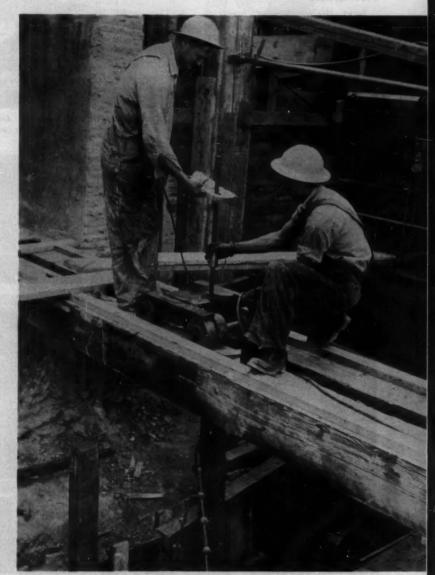
Contractor Haas & Haynie of San Francisco devised a special tool to help them do the job. They built small steel carts to carry the duct sideways a few feet and lower it into a trench dug alongside.

The carts ran across the trench on pairs of timbers, carrying the duct suspended below from cable slings attached to rods threaded into holes in the steel-plate body of the carts. Turning down on the threaded rods, one by one, lowered the duct into place at the bottom of the trench.

The duct originates in a basement cable vault of the Pacific Telephone & Telegraph Co. headquarters building in San Francisco. Passing beneath a parking lot next door, the cables run a distance of 137 ft to a manhole in the middle of an adjacent street. The path of the cables is a parabolic arc curving upward from the basement and approaching close to the surface of the parking lot.

Haas & Haynie had to lower the duct up to 18 ft to make way for the basement of a new building going up on the parking lot. No interruption in telephone service was permitted. The duct carries 36% of all San Francisco lines and half of the lines crossing the bay to Oakland. And the move must not damage the delicate wires inside the duct. A kink or break in the line would take weeks to repair.

Protected on the outside by short lengths of creosoted wood, the duct contains 42 cables. A



SMALL, BUT MIGHTY—Contractor-designed steel cart, just 1 ft square, can carry a load of three tons. Rod threaded through hole in carriage holds duct with cable sling.

#### CABLE MOVING CART . . ,

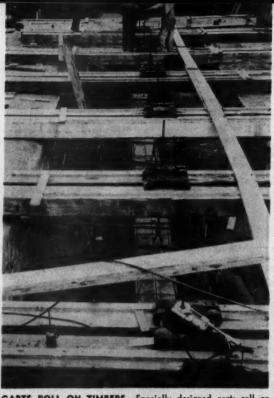
lead casing sheathes each cable and maintains a gas pressure of 9 psi. The cross-section of the duct measures 27 x 31 in. It weighs 450 lb per ft.

To get the job started, the contractor dug a 15-ft-wide trench alongside the duct. Depth of the trench averaged 21 ft. The duct was left undisturbed at this stage, resting on a 3-ft-wide shelf at the top of the trench. Vertical timbers braced by horizontal trench jacks held the sides of the trench.

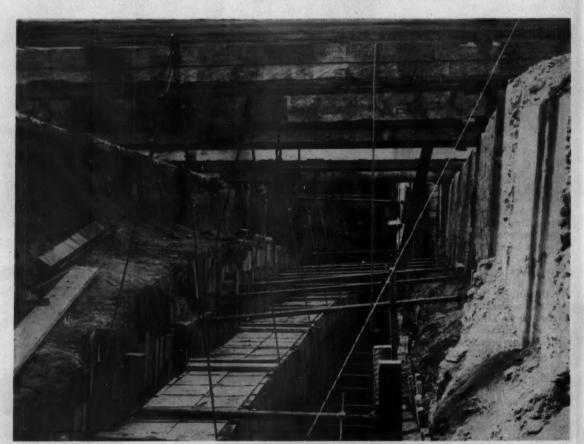
#### Steel Cradle

Next the contractor built a cradle at the bottom of the trench to support the duct. He set pairs of WF beams into 19-ft-deep holes, embedding the bottom of the piles in a 6-ft-thick layer of concrete. At the top he linked the six pairs of piles with steel beams to complete the cradles.

Then the crew placed pairs of 16 x 16-in. timbers for tracks



CARTS ROLL ON TIMBERS—Specially designed carts roll on timbers across top of trench to shift duct into lowering position.



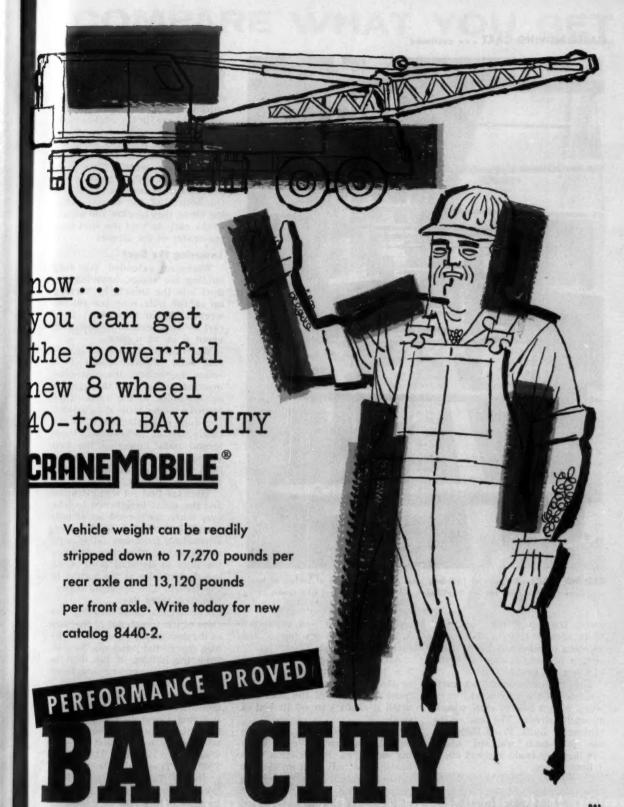
SLINGS HOLD DUCT—Cable slings attached to clevis hooks at bottom of threaded rods hold duct. Wood planking held by steel

strapping protects duct during move. Trench jacks bracing vertical sheeting are moved, one at a time, when they get in the way.

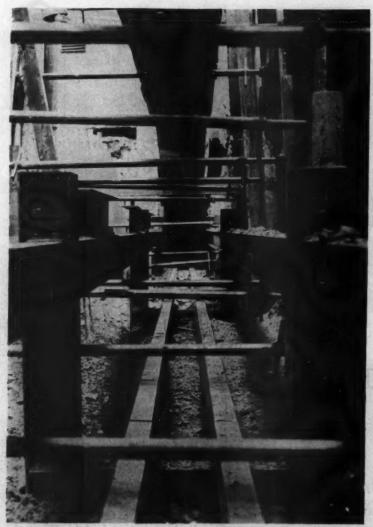
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THE WORLD'S BEST BUILT SHOVELS AND CRANES... NOW AVAILABLE WITH THE NEW BAY CITY LOW RATE FINANCING PLAN BAY CITY SHOVELS INC., BAY CITY, MICHIGAN, U.S.A.



RESTING PLACE—Six pairs of 19-ft-long steel piles set in holes at bottom of trench will support duct in final position. Steel beams link pairs of piles and form cradle.

across the top of the trench on 10-ft centers with a 4-in, gap between members. A 2 x 4 nailed on top of each timber kept the carts on the timber tracks.

The contractor-designed carts consisted of a welded steel framework with a pair of steel wheels at each corner. The carts—the contractor built 13 of them for the job—each weighed about 250 lb. They could support about 3 tons apiece.

Two holes drilled through the steel-plate body of the carts held the threaded rods from which the duct was suspended. The 1-in. rods projected below the gap between each pair of timbers. A clevis hook at the bottom of each rod held a cable sling that looped

around the duct and supported it. Friction nuts on top of the carts held the rods.

After sheathing the duct with 2 x 12-in. planks held in place by steel strapping, the contractor freed both ends of the duct and lifted it about 1 in. off its bed of earth.

To lift the duct, workmen moved from cart to cart, turning down on the friction nuts holding the rods with an electric ratchet wrench. This pulled the rods up. First it took slack out of the slings and finally it lifted the duct off its resting place. The lifting operation took about four hours.

The contractor left the duct hanging in the slings overnight to make sure the assembly held the load without settlement. Before shifting the duct over to the center of the trench the next day, workmen dug out some of the material beneath the duct to clear away any possible obstructions.

They inched the carts along the timbers with pinch bars jammed against their wheels. The carts moved about 9 ft to position the duct over the support cradles at the bottom of the trench. After the move, they blocked the wheels of the carts to hold the duct over the center of the trench.

#### Lowering the Duct

Workmen extended the rods holding the slings, lowering the duct into the trench, by turning up on the nuts with the ratchet wrench. Again they went from cart to cart, extending the rods about 6 in. at a time.

When all of the 6-ft-long rods had been lowered about 5 ft below the timbers, the contractor inserted similar rods through the second holes in the carts. They looped a longer cable sling around the duct and attached it to the clevis hook at the bottom of these second rods. Lowering the first set of rods a few more inches then transfered the load to the second set of rods.

Then the first set was retracted and the slings lengthened to take over when the second set of rods was fully extended. In this way, alternating from one set of rods to the other, the crew lowered the duct to its final position on the steel cradles at the bottom of the trench. The lowering operation took three days.

The trench jacks bracing the sides of the trench got in the way as the duct was lowered. So workmen moved the jacks, one by one, from the bottom of the duct to the top, whenever one interfered with progress.

The entire job took only three months. It cost just under \$80,000. Building a new duct and splicing the cables into it would have taken about a year, and the cost would have run from \$150,000 to \$200,000. That's why Pacific Telephone & Telegraph decided to take a chance on moving the duct, in spite of the risk of damaging some of the cables.

Project manager for Haas & Haynie was Robert F. Kirkendall. A. E. MacDonald was job superintendent.

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TWICE THE WORK CAPACITY for only \$4355

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No clutching!
No shifting!
No stalling!

Quick-change attachments broaden your profit-range





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Why put money into limited-duty loaders that get only "thimble-size" loads, when you can double your output and earnings with a bigger-capacity Case 420? Exclusive torque-converter drive doubles the digging power and traction of the Case 420... maintains full break-out power at all times. Result: you get full loads twice as fast as any conventional clutch-type loader in a similar price range. With up

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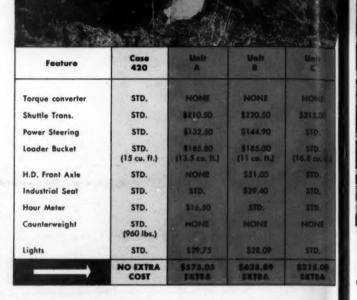
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you get as standard on a

CASE 420

cost you up to \$628 extra on other rigs!

List prices can be very misleading until you compare what you get with what you pay. When you include all the features you need, you'll find the Case 420 loader or backhoe-loader - with torqueconverter drive - actually costs less than most other rigs in its class. This is because the "420" is built up to a standard, NOT stripped down to a price. You'll be even more convinced when you see a "420" in action. Ask your nearest Case Industrial Dealer to show you one today.



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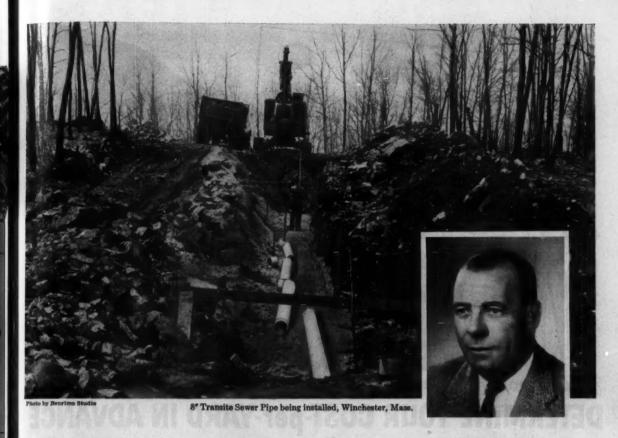
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- . KNOWS YOUR NEEDS
- SERVES YOU WELL
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SALES AND SERVICE THROUGHOUT THE WESTERN HEMISPHERE

The best way to build a pile foundation amid the old buildings in New Orleans' French Quarter is to drill holes and plant the piles.

#### **Pile Drilling Replaces Driving**

DRIVING PILES in the Old French Quarter of New Orleans is a delicate operation because the area consists mainly of very old buildings, many of which are not on the best foundations. Construction crews in the area have to do everything but walk on their tiptoes to prevent damage to these buildings.

Fortunately for New Orleans contractors it isn't often that a new building goes up in the strictly zoned "Vieux Carre." But there is a big one under construction right now—the \$3.7 million Royal Orleans Hotel. And the foundation contractor, S. K. Whitty & Co. of New Orleans, had to drill holes and plant timber bearing piles to get them down without disturbing the charming but structurally unpredictable old French buildings located around the site.

The soil under the site consists for the most part of a clay that lent itself to the drilling operation because it was stiff enough to hold the walls of the holes until the piles could be inserted. But there was one troublesome stratum, a layer of sand at a depth of 45 ft, that slowed the drilling and driving operation.

#### Sand Stratum

This sand layer varied in thickness from 1 to 7 ft over the site. At its thickest sections it could have provided the required bearing for the piles. But in other



TRICKY SITE—Clamshell, drill rig, and pile driver work on hotel foundations. Contractor has to be careful in drilling and placing

timber piles to prevent damage to old buildings surrounding site. Perimeter sheet piling provides added protection against movement.

#### **Three Rigs Place Piles**



COMBINED OPERATIONS—Link-Belt K-360 is rigged to handle both operations. It first drills the holes, then places and drives pile.



SEPARATE OPERATIONS—Two Link-Belt Speeder LS-98's handle two phases of pile placing—one drills holes, other drives piles.

places its bearing capacity was insufficient. It would not have been good practice to have some piles bearing on this stratum and the rest on a lower stratum because of the danger of differential settlement. So the architect specified that all the piles had to go down to a second, 15-ft-thick, sand layer, approximately 60 ft below street level.

This meant that the 10-in. drilled holes for the piles had to go through the upper sand level. The problem was to drill the hole and then get the pile into it fast enough to prevent the sand walls from caving in and blocking the hole.

Most of the time Whitty was able to do this. But they had trouble with a few of the holes. In the worst cases, fortunately rare, they actually had to pull out the pile and redrill the hole. But generally they were able to hold the walls of the hole by pumping drilling mud down the hole while the drill was passing through the sand. The mud lined the holes so that the walls held up until they got the pile in.

#### Two Rigs

At first Whitty used two rigs to drill and place the piles. A Williams drill with a 10-in. wet rotary Hawthorne or James bit and a 65-ft kelly mounted on a LS-98 Link-Belt Speeder crane handled the drilling. The drill was operated by a power takeoff from the main engine of the crane. A Link-Belt LS-98 with a Vulcan No. 1 hammer and 75-ft leads placed the piles and drove them the last 10 ft into the lower sand bed to a specified resistance of 30 blows per ft.

At this depth the driving had



DRILLING-Power takeoff from main engine of crane powers drill through gear box.

no effect on adjacent buildings. Just to make sure, a seismographic crew was on hand during all driving operations to check ground vibrations. They found that trucks passing on the street were giving higher readings than Whitty's machines.

Whitty used the two rigs over most of the site. They worked out pretty well because space was limited and they were more maneuverable than bigger rigs. But in some cases they slowed the operation because the drill rig had to back away from a hole to let the pile driver in.

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#### Single Rig

To speed the process, Whitty mounted both a 75-ft drill stem and 90-ft leads on a Link-Belt K-360 so that it could handle both drilling and driving.

The piles were Class B southern pine timber piles 54-64 ft long. Diameter varied from 6 in. at the tip to 14 in. minimum at the butt. A total of 1,371 untreated piles were required. The tops of these piles were cut off about 18 ft below street level, well below the ground water level. In addition, 30 treated piles were needed under the balcony columns. The piles were designed for a capacity of 25 tons per pile.

continued on page 130

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## They Bought Armco Products Installed

**Erecting Armco Steel Building** 



**Tunneling with Armco Liner Plates** 



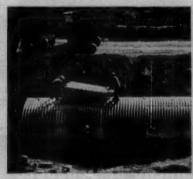
**Boring with Armco Welded Steel Pipe** 



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As an additional protection for the adjacent buildings during the foundation work, Whitty drove over 500 tons of sheet piling around the perimeter of the hotel

The design of the hotel has to conform to the code of a commission which strictly controls all construction in the area. No building in the Vieux Carre can be more than six stories high; this limited the capacity of the hotel to 350 rooms. The general appearance also has to conform to the style of architecture in the French Quarter. In this case the architects have tried to retain, as much as possible, the spirit of the old St. Louis Hotel, which formerly was located on the same site.

#### Contractors

General contractor for the hotel is the J. A. Jones Construction Co. of Shreveport, La. Whitty has the foundations subcontract. Curtis and Davis, of New Orleans, handle the architectural design and supervision.



PERIMETER PROTECTION—Link-Belt LS-98 drives protective sheet piling around edge of hotel site. Contractor used more than 500 tons of piling, later salvaged most of it.

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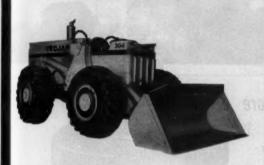
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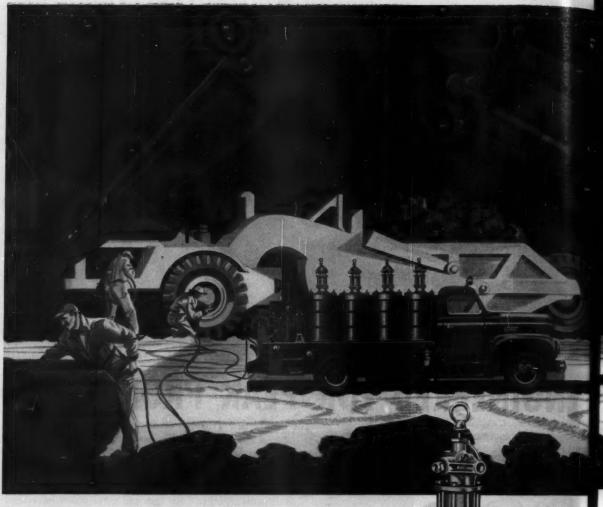
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PICKUP—Koehring crane, lifting through a trussed strongback, picks a 74-ft prestressed concrete beam up from the casting bed.



LOADING—Semi-trailer backs into position alongside of the casting bed, and crane lowers first one end and then the other into cor-

#### Big Bridge Beams Ride

A special semi-trailer hauling unit, built to the contractor's specifications, transports prestressed concrete beams up to 74 ft long from the casting yard to erection sites along a 14-mile stretch of interstate highway in Tennessee. The rig more than pays for itself with savings on both loading and hauling times.

A SEMI-TRAILER built like a fireman's hook and ladder truck cuts the cost of loading and hauling 196 big prestressed concrete beams for structures on an interstate highway job in Tennessee.

Jack Markham, field superintendent for J. B. Michael & Co., Inc., of Memphis, says it takes his men an average of only about 15 minutes to place and secure a 74-ft, 25-ton beam on the trailer. Then the rig is off. Maximum haul from the casting yard to erection site is 16 mi.

Markham didn't have much choice about where to locate the casting yard. He had to import concrete aggregates by rail, and there is only one railroad in the area, about 6 mi from the nearest end of the job.

Michael's two contracts amount

to \$4.8 million and cover a 14-mile stretch of four-lane highway in an all-new location parallel to existing U.S. 70. The contracts include eight grade-separation structures of prestressed concrete, six structures of conventional reinforced concrete cast in place, and one combination structure.

Michael's engineers designed the semi-trailer; Rogers Manufacturing Co. of Nashville fabricated it. The rig is powered by a Mack diesel truck-tractor. A sectional girder connects the tractor with the rear-end carrier.

The tillerman rides a step on the back of the carrier. Beside him on the step is a two-cylinder Wisconsin gasoline engine that powers a hydraulic-ram steering linkage to carrier's four dual wheels. A valve near the engine is the tillerman's control. He also has brakes, tail and signal lights, and a horn for signaling the driv-

Maximum turning angle for the wheels is 60 deg. The girder joining the rear-end carrier to the Mack tractor resembles a standard sectional crane boom, but it is heavier.

Bolt-assembly of adjacent girder sections takes place quickly, thanks to the handy location of connection plates outside the trussed-box girder's cross-section. Each section carries a piece of air line for trailer brakes. Additional short runs with quick-connect unions close the line between sections. Sections also carry electric wiring for trailer lights and horn.

A single Koehring crane with a strong-back truss loads the big



rect position on the trailer's bearing plates. Men steady each end with taglines.



READY TO GO—As soon as the slings are released, workmen secure the beam with tiedown cables, and the beam is ready to travel. Two of the 74-ft beams make a load.

#### on Custom-Built Carrier

beams on the trailer. Slings from both ends of the strongback slip under pipes projecting from the ends of the prestressed beam. The beam is swung from temporary position, adjacent to the casting beds, around to the trailer. Men steady each end with taglines, helping the crane settle first one end then the other in correct position on the trailer's bearing plates.

As soon as the slings are released, tie-down cables are secured, and the beam is ready to travel. Two of the longer beams (up to 74 ft and weighing 25 tons each) are loaded for each trip. Three shorter beams make a load.

The long beams cast in the contractor's yard are for separations where intersecting roads go over the new highway. At right-angle crossings spans are 37-64-64-37-ft. The interior spans attain the maximum yard-cast length of 74 ft where the skew is 28 deg from the right angle.

The 74-ft beams are 4 ft 4 in. deep, with bottom flanges 2 ft

wide, webs 6 in., and top flanges 1 ft 8 in. wide.

The system used by Michael involves post - tensioning with Stressteel bars ranging from ¾ in. to 1¼ in. round. The yard is in charge of yard superintendent Jim Thompson. Beam production is at the rate of 15-20 per week. Plywood beds are set along roadways in groups of three parallel rows so that all forms can be reached by direct chuting from truck-mounted Worthington mix-

ers. The mixers are charged from a batch plant at the railroad siding. Bridge piles also are cast at the yard.

The project was designed by Lockwood, Kessler & Bartlett, Inc., Syosset, N.Y., for the Tennessee State Highway Department, H. M. Bates, chief engineer, and Fred Greve, bridge engineer, Charles W. Wood was project engineer for the designing engineers, and John Ruby was in charge of bridge design.



GIRDER CONNECTIONS—Girder joining the rear-end carrier to the tractor resembles a sectional crane boom. Connection plates make it easy to bolt the sections together.



## MAINLINE TRAINS STAY ON SCHEDULE DURING BRIDGE RECONSTRUCTION

#### A typical Commercial tunnel lining support application

The New York, New Haven and Hartford Railroad has to maintain train schedules on a four-track main line while a 70-year old stone bridge on the line is completely reconstructed. Here's how Commercial steel tunnel liner supports help.

The stone arch of the bridge over Stephenson Brook Drain in New Rochelle, New York-55 feet portal to portal-started to give way and fail after years of continuous service involving frequent live loading, vibration and weathering conditions. To prevent complete collapse, and to restore the bridge, all work had to be carried on without interferring with the main-line rail traffic overhead.

First, the 102-inch drain running through the main arch was diverted through one of the eight-foot side arches used as a pedestrian underpass. The main arch was then immediately backfilled and tamped.

Actual restoration of the bridge was begun following approval of design specifications submitted by Commercial engineers. Steel plates and ribs for the arch supports were completely fabricated by Commercial before erection.

As heading in the arch backfill is removed, the steel arch support—four-inch "H" beam ribs, spaced on 16-inch centers, with steel liner plates bolted between each course, are installed into position.

Solid and uniform back packing—between the steel support and the underface of the original stone—is provided by means of high pressure grouting. Easily removable threaded plugs in threaded grout openings facilitate the operation.

When the Commercial steel arch support is finally completed and the earth fill below the spring line is removed, new permanent concrete lining (imbedding the steel ribs and plates) will be poured:

Not once during the complete restoration job will a "slow order" be required for the heavy railroad traffic overhead.

Complete information on how Commercial can help you with your surface or sub-surface tunnel problem—regardless of length—is easy to get. Just write to: Dept. B-14, The Commercial Shearing and Stamping Company, Youngstown 1, Ohio.

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IT'S SERVICE AS USUAL with New Haven trains running on schedule overhead as reconstruction of a stone bridge built in 1887 moves right along to completion,



STEEL TUNNEL SUPPORT braces and holds stone in the sides and crown — will remain in the arch permanently. Lightweight, it requires no erection equipment,



SIMPLE ONE-HAND OPERATION, with ratchet-type wrench, quickly and easily handles all boiting as heading is removed and tunnel liner supports are installed.

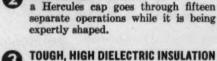


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A new subway running from the Senate Office Buildings to the Capitol in Washington is a conventional cut-and-cover job except for one stretch where it straddles an existing tunnel and cuts under a street.



FORMS—Universal panels held by strongbacks braced with rakers form the walls of the subway. Timber sheeting along sides of trench is left in place to form outside of walls.

#### **Subway Straddles Tunnel**

A NEW SUBWAY soon will whisk U.S. Senators from their offices to the Senate chamber in the Capitol at Washington.

Blackwell Engineering Co. of Merrifield, Va., is building the subway by the cut-and-cover method. It sounds like a conventional job, but there is one spot where complicating factors combined to give the contractor trouble. The subway crosses under a street separating the two adjacent Senate Office Buildings and straddles a railroad tunnel below the street.

At this point, it's like a double-decker bridge. The subway bridges the old brick-lined railroad tunnel; and the street, in turn, bridges over the subway. Because traffic has to be maintained while work is in progress, a network of steel beams carries the vehicular traffic and two street car lines over the subway trench.

The subway starts at the new

Senate Office Building (just completed last year), crosses under the street, runs alongside the old Senate Office Building, and then veers towards the north wing of the Capitol.

The new subway extends only half way to the Capitol. The other half won't be completed until the current renovation of the face of the Capitol is finished. In the meantime, Senators will transfer at the end of the new line to the final leg of the old subway that links the Capitol and the old Senate Office Building. Eventually the new subway will replace the old one.

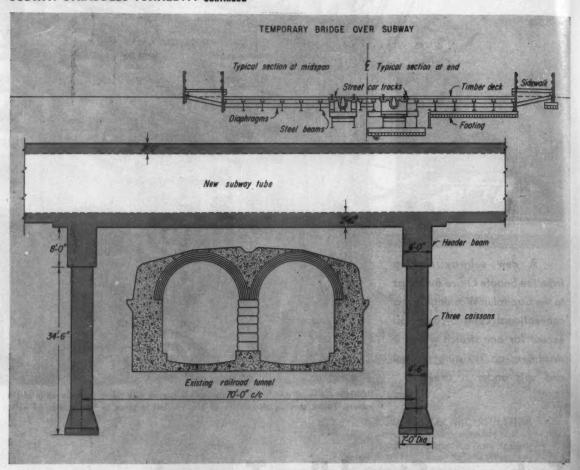
Length of the new subway is 1,000 ft. The first half is a 12x23-ft box section that carries two lines of track. Where the 170-ft-long spur from the old Senate Office Building connects with the main line, the subway widens into a double section carrying four lines of track. A typical section in

this stretch measures 12x41 ft, and includes two interior rows of supporting columns.

Blackwell started work by driving a row of soldier beams along each side of the subway. Spacing of the soldiers was 6 ft. A Lima crane, one of two on the job, handled the driving with a McKiernan-Terry 9-B-3 hammer. It drove the piles at least 5 ft below the final grade of the bottom of the tunnel.

A dragline with \( \frac{4}{2} - yd \) bucket followed behind the piledriving rig to dig out the 26-ft-deep trench. Two Caterpillar tractor shovels worked in the trench, heaping material for the dragline. Material was dumped alongside the trench, within easy reach for backfilling later. Excavation on the job totaled about 33,000 yd.

The bracing system within the trench varies according to the width of the trench. In the twotrack stretch, two courses of



DOUBLE-DECKER BRIDGE—Two sets of caissons—three at each end—support 70-ft-long section of subway tube that bridges over

existing railroad tunnel. Timber decking on top of steel beams carries streetcar tracks and vehicular traffic over subway trench.

8BP36 steel struts spaced at horizontal intervals of 18 ft butt against the soldier beams on either side. Struts in the top course of the bracing system are 6 ft below ground level; the bottom course, 11½ ft below the top course. The bottom course struts were removed when the bottom slab of the subway had been poured and allowed to set up.

In the wider four-track section of the subway at the other end, Blackwell placed a row of 8BP36 posts along the centerline of the trench to hold the struts that span between soldiers. The two courses of struts butt against 12BP74 walers instead of bearing directly against the soldier beams.

The contractor kept the soldier beams on each side of the trench as close to line as possible because the 3-in. timber sheeting that holds back the ground also serves as a form for the outside of the subway walls. The sheeting at the top of the trench is blocked back against the rear flanges of the soldier beams. In the lower portion near the bottom of the trench, the sheeting is flush with the inside face of the soldiers to provide a smooth surface for the concrete wall.

With the trench excavation and sheeting completed, Blackwell hoisted the Cat loaders out of the ditch and began pouring the 2-ft bottom slab of the box section. They placed 2x6-ft Universal form panels for the inside face of the 1-ft, 8-in.-thick walls as soon as concrete in the bottom slab hardened.

Walers holding the panels together were 4x6's spaced at 2 ft. To brace the forms, the contractor set 10WF21 strongbacks at 6-ft intervals, same spacing as the soldier beams. A clip bolted to the concrete deck slab clamped the bottom of the strongbacks. At the top, a bent rod looped around the adjoining soldier beam held the strongback in place.

To form the subway roof slab, Blackwell laid %-in. plywood sheets on top of Spanall joists spaced at 18 in. The Spanalls, held by 4x4 timher posts topped by 4x6 headers, span up to 13 ft. The trussed joists take quite a load—thickness of the roof slab varies from 24 to 30 in. Roof slab forms are 4x8-ft plywood sheets.

All the concrete for the job is brought in with transit-mix trucks. About 80% of the time the trucks can maneuver close enough to the trench to chute concrete directly into 8-in. elephant-trunk tremies. The rest of the time a Koehring crane with ½-yd bucket places the concrete. The job will take altogether, about 11,000 yd of concrete.

continued on page 143

## mobility and capacity



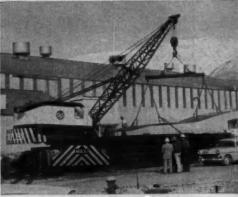
CELANESE CORP. . BISHOP, TEXAS



H. C. PRICE CO. . SOMASTIC DIVISION . BUSTLETON, PA.

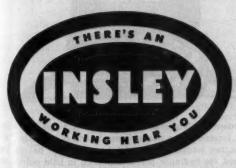


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Full operation with wheels off the ground . . . proof of how two wedge locks hold beams so securely that you can operate at full rated capacities. Off-the-ground jacking ability is good for quick tire changes or for lifting out of soft spots.

Now Lorain engineers bring you another pace setting development—the first practical, economical answer to efficient, fast, secure power-outrigger operation on rubber tire machines.

Patented Power-Set Outriggers feature four independently controlled, and hydraulically powered curved beams. The oscillating floats at the end of the beams move out and down simultaneously for fastest setting. Then two friction locks automatically take over for positive safety under any operating conditions.

Quick leveling. Each outrigger is independently controlled . . . lets you adjust to uneven or sloping ground

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MOVE

conditions. Positive leveling eliminates up-hill swinging ... saves swing clutch wear ... does away with hazardous side loadings.

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Unmatched performance costs no more. Compare with other outrigger systems. You'll find none can give you the speed plus working stability of Power-Set Outriggers, and you'll find them only on a Lorain. See your Lorain distributor today, or write direct for booklet giving full description.

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THE THEW SHOVEL COMPANY, LORAIN, OHIO



Independent leveling and two-way lock. A single hydraulic cylinder located in the beam moves in and out quickly. "A" indicates two wedge locks that take over when beams are positioned. No hydraulic pressure needed to hold outriggers in extended position.



UNDERPINNING—Where spur of subway meets the old Senate Office Building, underpinning supports wall of building. Hole will be cut into basement to make subway entrance.

While most of the job was smooth sailing, Blackwell found that bridging over the old railroad tunnel was trouble.

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They called in a subcontractor to sink six caissons—three at each end—to support the 70-ft-long section of subway that straddles the tunnel. Square Construction Co. of Baltimore installed the 4½-ft-dia cast-in-place caissons.

A workman at the bottom of the hole dug out ahead of the casing by hand. He loaded material into a bucket that was drawn up to ground level with an air-operated winch. The digging was easy. It was mostly through sand and gravel in the upper levels, some clay in the lower portion. They hit ground water about 8 ft from the bottom of the 34½-ft-deep shafts. An air-operated sump pump kept the water down.

Square installed one caisson at a time, completely finishing each one, including concreting, before starting on the next.

When all six caissons were in place, Blackwell took over again and poured an 8-ft-deep header beam across the top of each set of caissons. Then they began pouring the box section of the subway, much as before, except that here they built the walls first and added the base slab later.

At the bottom of the side walls, heavily reinforced girders 3 ft, 4 in. wide and 2 ft, 10 in. deep span between the caissons at each end. The girders were poured on the unexcavated ground above the railroad tunnel. But they are designed to carry the load of the subway when the structure is complete. Thus, settlement of the subway will not disturb the railroad tunnel.

To maintain traffic in the street above the subway-tunnel crossing during the work, the contractor built a temporary bridge. The 60-ft-wide bridge is divided into three sections: a 20-ft vehicular lane on each side of two street car tracks in the center.

As footings for the bridge, Blackwell laid two 8x8's on either side of the subway trench. The 8x8 runners rest on short lengths of 6x8 placed side by side in a row. A series of 21WF73 beams span between the footings, carrying a timber deck. Spacing of the beams is about 4 ft on the average. Channels on approximate 8-ft centers serve as diaphragms that connect the beams. On top of the beams, 6x8 nailers support the 6-in. wood flooring.

The work is now virtually complete. Superintendent on the job for Blackwell is Earl Robertson.

#### NOTHING BEATS POWER-SET\* OUTRIGGERS



seconds. For highway travel, outriggers are fully retracted. Oscillating floats automatically fold against both box ends for minimum clearances.



seconds. It takes only 20 seconds to retract beams to 8" clearance for on-the-job moves . . . another 20 seconds to reset.



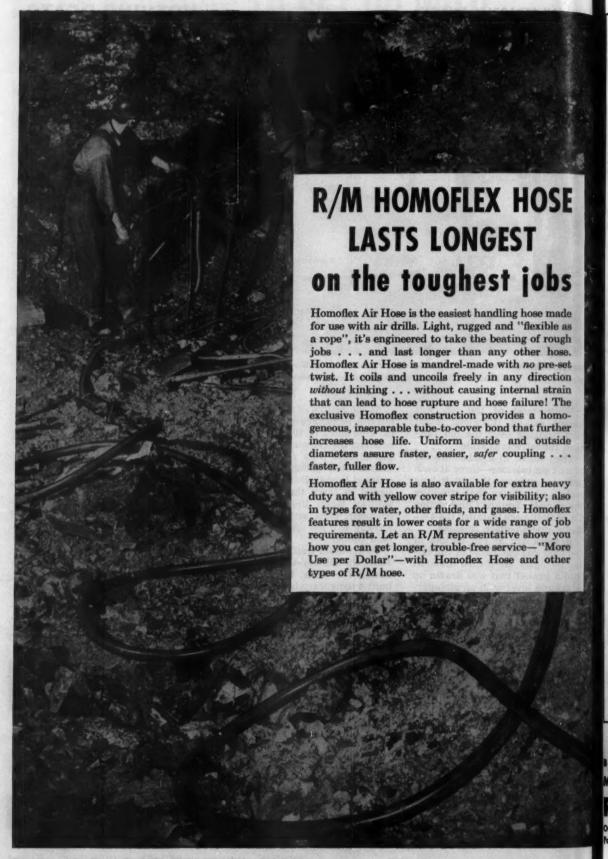
seconds,... to fully extend and set. Independent control of each beam permits level stability on uneven ground, or less than maximum spread for working in narrow quarters.

See your Lorain distributor.

THE THEW SHOVEL COMPANY, Lorain, Ohio

# ON THE MOVE

Tradamark



Page 144 — CONSTRUCTION METHODS and Equipment — April 1989



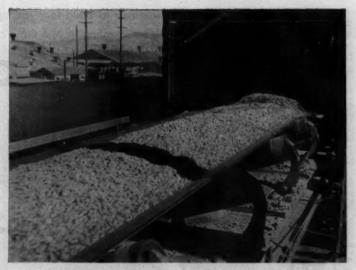
# HOMOFLEX CONSTRUCTION

More flexible and lighter than any other hose for equal pressure.

- SUPER-STRONG
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- . FLEXIBLE AS A ROPE
- LIGHT WEIGHT

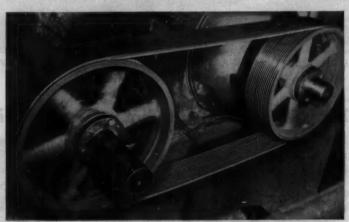
Note in cross section how specially designed braid permits the rubber tie-gum to penetrate and bond the braided plies during the plastic stage of vulcanization, This results in an inseparable tube-to-cover bond. Write for Bulletins M694 and M610.

"More Use per Dollar"



#### RAY-MAN CONVEYOR BELT TRAINS BETTER

Ray-Man has the extra flexibility to train naturally, trough easily . . . handle heavier loads. Cushioned strength members plus double compensation to relieve outer-ply stress—top and bottom—absorb load impact and greatly prolong belt life. Ray-Man really holds fasteners, is highly rip resistant . . . requires no breaker strip! Exclusive "XDC" Cover protects against wear, tear, cuts and abrasion. Check advantages of Ray-Man for your job . . . Other types include extra-cushioned Homocord for severe shock loading, and R/M Tension-Master for long lifts, high tensions. Write for Bulletin M302.



#### R/M POLY-V® DRIVE ELIMINATES BELT MATCHING

Single unit belt (not an assembly of V-belts), across full width of the drive-sheave eliminates belt "length-matching" problems. Equipment downtime and belt replacement costs are minimized. Patented Poly-V Drive has twice the tractive surface of a V-drive, and delivers up to 50% more power in the same space or equal power in as little as ½ the space! Just two cross sections of Poly-V Belt meet every heavy duty power transmission requirement. Greater power delivery and drive dependability begin when you specify R/M Poly-V\* Drive for your mine fans and other equipment. Write for Bulletin M141.

\*Poly-V is a registered Raybestos-Manhattan trademark.

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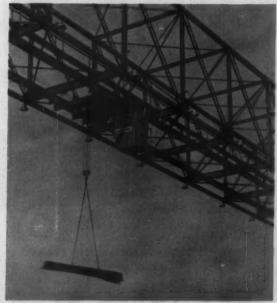
A contractor with a \$14.7-million contract to build four settling basins for a filter plant took a calculated risk by investing in two big gantry cranes.

#### A Gamble on Gantries - Will

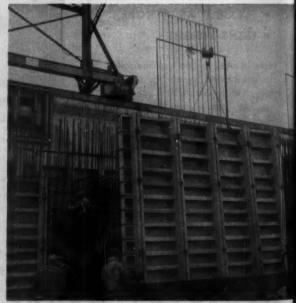


EACH GANTRY STRADDLES A 300-FT-WIDE SETTLING BASIN, COVERING THE ENTIRE WORK AREA WITHOUT OBSTRUCTING IT.

#### They Must Work Full Time to Earn Their Keep



HAULING RODS—Trolley running back and forth on gantry arm spots load of reinforcing steel over point on deck where it is needed.



SETTING FORMS—Crane places a 15x16-ft wall panel for a side wall. It picks up and delivers the panel in just five minutes.

t Pay?





CHICAGO BOOM-Mounted on gantry tower, a 30-ft boom equipped with 5-ton hoist adds to rig's versatility.

POURING CONCRETE—Trolley hoist lowers 2-yd concrete bucket into position for pour. Each gantry places 50 yd per hour. They will pour a total of 157,500 yd of concrete.

A DARING CONTRACTOR in Chicago has put two giant gantry cranes to work on construction of four 300x700-ft settling basins at a filter plant on the shore of Lake Michigan.

The twin gantries span 300 ft over two rows of settling basins that flank a battery of filters in the center of the 65-acre cofferdamenclosed site. The gantries handle all materials—concrete, reinforcing, and forms—that go into the structure.

Each of the gantries consists of a 74-ft-high tower and a 300-ft bridge that carries a 6-ton capacity trolley hoist. The tower runs back and forth along the cofferdam sides of the basins on rails. Legs supporting the other end of the gantry ride on rails set on top of the filter structure in the middle of the basins.

The gantries represent a considerable investment, even for a \$14.7-million job. A. L. Jackson Co. of Chicago took the plunge on them only after careful studies of their material handling problems on the job. They considered cableways, conveyors, and tower cranes before deciding definitely on the gantries.

They finally selected the gantries because they figured their mobility would pay off in decreased handling time for all materials. Main advantage of the big twins is that they cover the entire work area without obstructing it.

But to make them pay the contractor has to keep them busy all the time. To help schedule operations and make sure that the cranes are used effectively, Jackson had a model of the settling basins and cranes built by Rush Studios of Chicago. The model is made of strips of clear plastic. Built to a scale of ¼ in. per ft, it covers an area of about 50 sq ft.

Besides helping to plan crane movements, the model comes in handy for familiarizing supervisory personnel with the job. They get a clear picture of what they have to do. It's especially helpful in laying out forming and pouring sequences from day to day.

#### It's a Big Job

Part of a \$100-million project, Jackson's contract is the largest ever let by the City of Chicago. The completed plant, the Chicago Central District Filtration Plant, will be the world's largest. It will

#### A GAMBLE ON GANTRIES ... continued

have a capacity of 960 million gallons per day, and will supply water to three million people in northern Chicago and nearby suburbs

The job involves:

 Driving 539 miles of timber piles.

· Placing 157,500 cu yd of concrete and 16,000 tons of reinforcing.

• Installing 470,000 lb of castings in the walls and slabs of the basins.

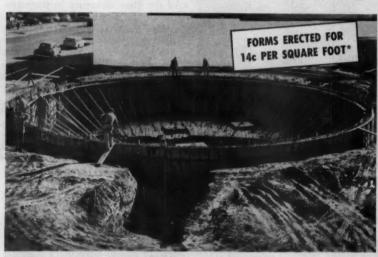
· Setting 116 huge butterfly valves and 23 sluice gates.

The cofferdam and filter substructure were completed under previous contracts. Jackson's job started with the piledriving. They sublet this part of the work to Thatcher Engineering Co. of Waukegan, Ill.

The job called for 54,000 untreated timber piles to support the base slabs of the settling basins. Four crawler cranes - a Bucyrus-Erie 54-B and three

PILEDRIVING-Four rigs drive as many as 526 untreated timber piles in one 8-hr day.

#### Restaurant-in-the-round: a study in economical forming



Drive-in restaurant, Englewood, Colorado Architects: Berne, Muchow, Baume & Polivnick; and Polevitzky, Johnson & Associates

General Contractor: Finegold & Chavers Forming Contractor: Russell Graham

The specifications for this unusual drive-in restaurant called for a circular basement foundation 70'0" in diameter, 9'4" high; an access tunnel 58'0" long, 9'0" high; and 275' of retaining wall 9'-10' high.

For the circular portion alone, over 2000 square feet of forming was erected for only 14c per square foot. Complete stripping cost was 4%c per square foot: JUST 184c PER SQUARE FOOT FOR INSIDE AND OUTSIDE FORMING!

Since wood or metal stiffeners are eliminated with Gates thin-panel Forming Systems, the same panels were used to provide true curved radius walls (not a series of flat planes) and long walls that are arrow-straight and smooth.

Regardless of the job, this economy and versatility built into all Gates Forming Systems can reduce your forming costs, too. Contact your nearby Gates dealer or write us direct.

\*Only 7c per contact foot.





Brunches in Spokune, Rochester and Lethbridge

Manitowocs-fitted with Vulcan 50C hammers drove the piles.

Weather conditions made the driving much tougher than it ordinarily would have been. Bitter cold temperatures and biting winds from off the lake froze both the ground and the crews.

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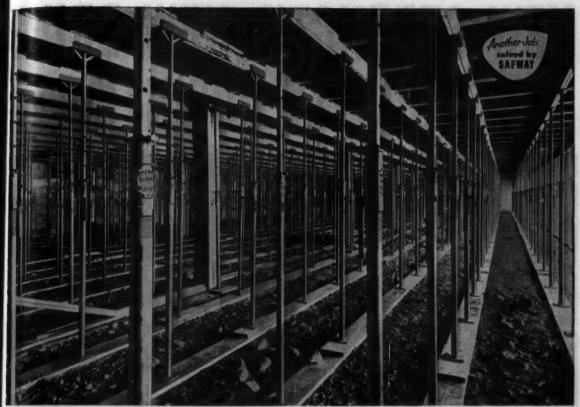
To get the piles started through the layer of ice covering the ground, a crew member drove an 8-in. location spike through the ice and into the frozen ground. Then another workman broke up the ice around the spike with a steam hose and cleaned out a hole to start the pile in with a jet of

Length of piles varied from 46 to 60 ft. It usually took a rig about 2 min to drive a pile. The four rigs combined drove as many as 526 piles in one 8-hr working day.

Bearing capacity of the piles is 25 tons. Supplied by Chicago Wood Pile Co., they are lengths of pine and oak with a minimum diameter of 1 ft.

To keep water in the cofferdam down during the job, Caisson Corp. of Niles, Ill., was called in to install a sump system. Ground level inside the cofferdam is about 12 ft below the water level in the

continued on page 151

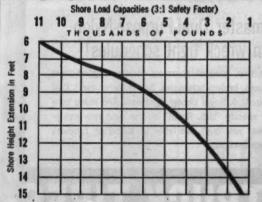


No shore bracing needed on new Rockford, Ill., shopping center job

### 1-Man Steel Shores Cut Pour Time by 1/5

#### It's Easy to Figure Your Jobs!

With this graph of shore capacities at various extensions, it is a simple matter to calculate your shore spacing and the number of shores needed:



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#### LEARN HOW YOU CAN SAVE!

Safway engineers will help you plan more efficient shoring that can increase your profits. Send job details for expert recommendations (no obligation). And write today for FREE BULLETIN 24.

#### SAFWAY ADVANTAGES MINIMIZE SETTING AND STRIPPING TIME; FEWER SHORES ARE REQUIRED

SAFWAY TELESCOPING SHORES can be set and stripped so fast that overall concrete pour time is reduced 20%, say many progressive contractors.

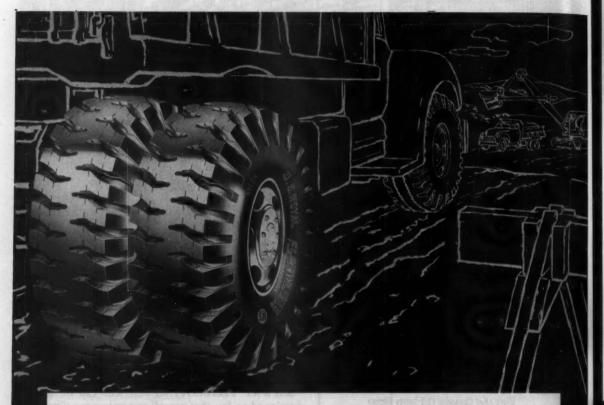
One man handles the entire job—carries, places and adjusts the shore. Rough height adjustment is set with a simple pin. Then fine adjustment is made by turning the threaded sleeve nut to exact fit. The U-shaped shore head seats 4 in. ledgers or 2 in. lapped lumber quickly and accurately without nailing. Bracing is unnecessary on most jobs to 12 ft. high.

Planning the job is speedy, too. After figuring the live and dead load and the ledger strength, you can easily work out the proper shore spacing. With Safway's high load capacity, fewer shores are needed.

Your nearby Safway dealer offers ample shore stocks for SALE or RENTAL... along with planning and erection service if desired. Find out how much time and money you can save on your next concrete job!



# NEW STRENGTH, NEW DRIVE CUT COSTLY DOWNTIME



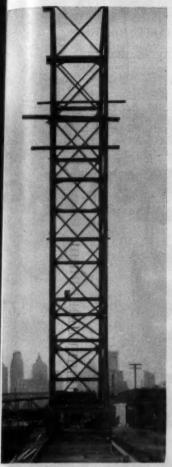
## New Cross-Lug U. S. Royal Fleetmaster Dual-Purpose-Nylon beats the tire hazards that can wreck tight schedules!

Contractors all over the country are finding out that using this great new U.S. Royal Fleetmaster Dual-Purpose reduces job delays due to tires. Its 52% stronger body, of exclusive Double-Strength Nylon cord, defies impacts that ruin ordinary tires. Its big, deep cross-lugs dig in for 35% greater

traction, prevent spinning wheels, bogged-down trucks, broken schedules. See it for yourself. Call your U.S. Royal Dealer right now. And make sure to specify "U.S. Royal" on the next new equipment you buy! Available in tubed or tubeless construction.

U.S. ROYAL TRUCK TIRES





GANTRY ERECTION—Contractor erects and guys tower section then adds long arm.



ANCHOR—Workman pushes down handle, tightening clamp device that grips rail to hold gantry in fixed position during pour.

Cross-ties at 11/2-ft centers hold the rails.

Caisson Corp. bored vertical holes around the edge of the coferdam and placed in them 25-ft sections of 24-in. galvanized corrugated metal pipe. Water seeps into the pipe through 3-in.-long slots cut into the indentations of the pipe. Wire mesh wrapped around the pipe covers the openings and prevents clogging. A 6-in.-thick sand and pea gravel filter surrounds the screen.

Six Swedish-made Flygt pumps draw water from the pipes. They include two 3-in. and four 1½-in. units. The sump system keeps ground water inside the cofferdam well below the surface of the work area.

#### **Gantries Go to Work**

Archer Iron Works of Chicago built the two gantries for Jackson. When they arrived at the job site

## NEED DEPENDABLE AIR-COOLED DIESEL POWER?



Jlo Series 365 7 Horsepower



Jlo Series 660 12 Horsepower

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SIMPLICITY: 2-cycle design, practical in this horsepower range, eliminates valving for maintenance-free operation.

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7 TO 12 HORSEPOWER: high power rating in a small package to match your requirements for a light-weight power source,

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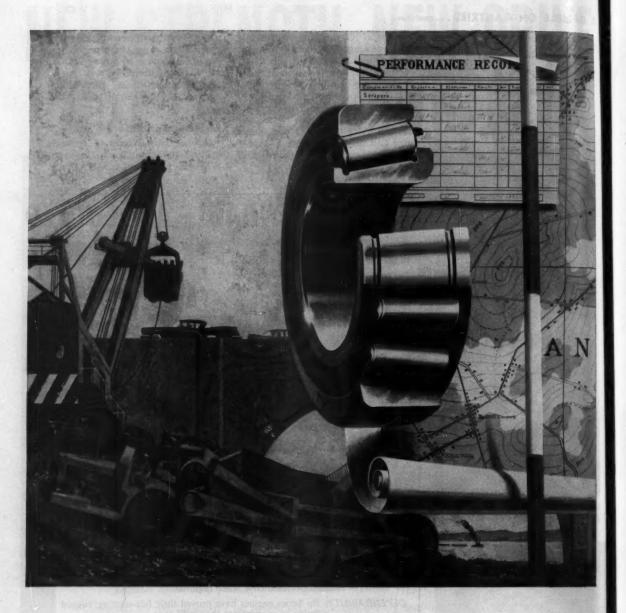
Hercules Motors Corp., Dept.12-D Canton 2, Ohio

Please send me bulletin on Jio Series engines and the name of my Hercules distributor.

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\*Reg. TM of Jlo-Werke, G.m.b.H., Pinneberg, Germany



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#### Parts determine performance

For the right bearing in the right place helps improve over-all performance — prevents breakdowns and high maintenance costs. Where can you get impartial assistance in choosing the right bearing? Call BESF. No other producer offers as much experience in improving product performance with bearings as BESF, makers of the most complete line of ball and roller bearings.



#### A GAMBLE ON GANTRIES...

from the plant, Jackson erected them in two stages. First they erected the 8½x20-ft tower sections, guying them with four cables running from anchors in the ground to the midpoint of the towers.

Then they erected the 20-ft-deep bridge in three preassembled sections. A P&H truck crane with 90-ft boom and 20-ft jib lifted the 100-ft-long sections up onto temporary supports. The erection crew connected the sections to complete the job.

With the gantries ready to move materials, Jackson was set to pour the walls and slabs of the settling basins. They sublet the forming to Adjustable Forms, Inc., of Chicago.

To form the 18-in.-thick basin walls, this subcontractor built 15x 16-ft panels made of %-in. plywood. Five double 3x8 walers in each panel hold the 4x6 studs spaced at 1-ft centers. A 2x6 plate runs around the edges of each panel. A double-thick 2-in. layer of Balsam wool placed between the studs insulates the concrete.

Connecting the inside and outside panels in each section are twenty-five %-in. Universal form ties. Using ¼-in. ties as originally planned would have resulted in more than 300,000 holes to patch with cement mortar.

To support the 11 to 12-in. deck slab forms, forming crews use 4x4 timber posts lapped and joined by Ellis Shore clamps. Headers on top of the shores support bar joists that hold 34-in. sheeting.

Column forms for the settling basins are furnished, installed, and stripped by Des Lauriers Column Mold Co., Chicago. Altogether the job will take 2,400 cylindrical metal column forms.

The twin gantries handle the concreting smoothly. Transit-mix trucks bring the concrete to the site and dump it into a 3-yd receiving hopper at the base of the gantry tower. A 2-yd hoist bucket inside the tower, powered by a 20-hp Allis-Chalmers electric motor, lifts the concrete to a 4-yd hopper 50 ft above the tower base. This hopper feeds the trolley bucket.

The trolley, manufactured by Robbins & Myers, Inc., Springfield, Ohio, runs on rails along the bridge of the gantry and swings the 2-yd bucket out over the settling basin to the pour area. Two Allis-Chalmers motors power the



BASE SLAB—Heavy reinforcing steel covers timber pile clusters that support slab. Section soon will be ready for concrete. Job will take 16,000 tons of reinforcing.



WALL CASTINGS—Heavy castings held in place by rods welded to dowels will become part of 6x8-ft sluice gates. Job involves placing 470,000 lb of castings for outlets.



FORMING DECK—Workman place bar joists that will hold ¾-in. sheeting on top of ledgers to form deck. The 4x4 timber shores are lapped and joined by Ellis clamps.



FROM TRUCK—Transit-mix truck dumps load of concrete into 3-yd receiving hopper at base of tower. Trucks deliver 800 yd per day.



INTO HOPPER—Receiving hopper dumps concrete into 2-yd hoist bucket powered by 20-hp motor. Hoist lifts concrete to hopper at top.



UP TO BUCKET—Hopper at top loads 2-yd concrete bucket that 6ton trolley carries back and forth along gantry arm to pour area.

trolley: a 5-hp unit provides a maximum travel speed of 250 ft per min, and a 15-hp motor powers the hoist.

Two synchronized Allis-Chalmers 10-hp slip-ring induction motors—one at each end—propel each gantry along the rails at a speed of 25 ft per min. Power for all the motors comes from a buried conductor laid in a trench alongside the rails. There are 10 plug-in stations for the cranes on each of the two lines.

Three operators run each gantry. One at the base of the tower moves the rig along the rails and takes care of the receiving hopper. Another in the cab at the top of the tower controls the hoist bucket and the hydraulically operated gate of the transfer hopper. A third operator on the trolley moves it along the bridge and lowers the concrete bucket.

It takes, on the average, a little more than 2 min to place a 2 yd batch of concrete. The two rigs together place about 100 yd per hour. Biggest single daily pour is 800 yd.

One of the two P&H truck cranes on the job sometimes handles small pours when the gantries are moving forms or placing reinforcing. To move reinforcing from stockpiles along the sides of the settling basins to within reach

of the gantries, Jackson makes use of a 30-ft-long Chicago boom mounted on the gantry towers.

Jackson keeps concrete crews on the job night and day. Two rows of lights spaced at 15-ft centers along the underside of the gantry bridges light the area.

#### Men on the Job

In charge at the site for A. L. Jackson Co. is project manager Ben Janda. Jack Louko is superintendent. For the City of Chicago, engineer in charge is Arnie Anderson. Keeping a close eye on their project is Jackson's vice president Paul A. Keim and president Arthur L. Jackson, Sr.

How 15¼ ton impact every 1.7 lineal inches often exceeds Proctor tests on base and fill



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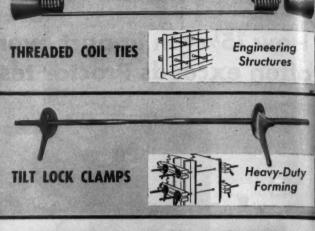






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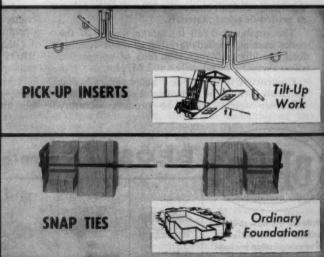
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CRANES TAKE TURNS CLAMMING OUT TRENCH AND DRIVING 8-IN. TIMBER SHEETING AS EXCAVATION PROCEEDS

#### **Heavy Timber Sheeting Shores**

Widely spaced soldier beams on 17-ft, 10-in. centers make possible the use of 16-ft pipe sections instead of 8-ft sections at a reduction in price of more than \$30 per lin ft.

HEAVY TIMBER SHEETING held in place by soldier beams spaced at 17-ft, 10-in. centers shores a trench for a water conduit in Philadelphia. The sheeting is 8-in. square timbers. Hughes-Foulkrod Co. of Philadelphia devised the unusual shoring scheme for several money-saving reasons. And it's working out well.

Why such a big gap between soldiers? It made possible the use of 16-ft sections of pipe at a much reduced price. The contractor

saves more than \$30 per lin ft on the 16-ft sections over the price of 8-ft sections. The 17-ft, 4-in. clear spacing between the struts spanning between soldiers leaves a gap just big enough for the pipe sections to pass through.

Originally the City of Philadelphia specified steel sheetpiling for the trench. But finally they decided to let contractors bidding the job choose their own method. Hughes-Foulkrod had thought about trying the out-size sheeting

system for some time, so as soon as they got word of the change they went ahead and worked out the details.

The \$1.1-million contract calls for placing 2,200 lin ft of 120-in. precast concrete pipe in a 26-ft-deep trench. Two high pressure water lines run alongside the trench just 10 ft away from its edge. To avoid possible disturbance to the lines, the City of Philadelphia requires that the shoring in the trench be left in



STRUTS—Welder connects beam that crosses trench between soldiers to brace shoring. Two courses of struts brace trench.



GUIDE—Angles welded to the face of offline soldiers hold steel flat that keeps timber sheeting in place between flanges.



PUMP—Gorman-Rupp pump sucks up water that seeps into trench through gaps in timber. Water table is 12 ft below ground.

#### Deep Trench

place permanently. That means material has to be as cheap as possible. And it gives timber sheeting a decided edge over sheetpiling. The 750,000 board feet of lumber that H-F ordered for the job cost considerably less than sheetpiling.

Besides greater expense, a sheetpiling shoring system would have other disadvantages. Ground water is about 12 ft below the surface at the site. So unless holes were cut in the sheetpiling, a high hydrostatic head would build up at the bottom of the trench, adding to the load on the shoring system.

Project Engineer Harold Lo-

gan, Jr., designed the unusual shoring system. He based the design on the latest theories of earth pressure. One of his basic assumptions was that the soil would behave elastically. According to this theory, timber sheeting deflects under the load of earth pressure and throws most of the load onto the relatively stiff bracing members—the soldier beams and struts.

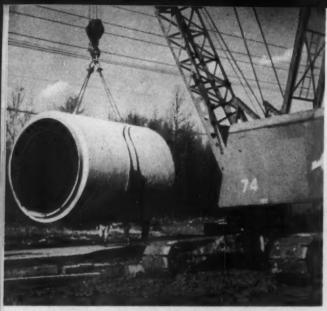
And the theory also assumes that earth pressure does not increase uniformly with depth below surface, but tends to level off at some point and approach a constant value. Both these principles make possible considerable savings in materials and result in a more realistic shoring system.

Another important design problem was handling surcharges. The shoring has to take care of a surcharge of more than 125 tons when the Manitowoc 3900 crane is lowering the 35-ton pipe sections into the trench.

Logan figured the surcharge load would be concentrated at the top, extending in a decreasing bulb of pressure towards the bottom of the trench. This throws most of the load on the top course of struts, and has little effect on the shoring at the bottom of the trench.

The net effect of surcharge and earth pressure, then, is a practically uniform pressure from top to bottom of trench. The result of Logan's analysis showed that a uniform pressure of 500 psf would represent the most severe loading condition. So he designed the timber sheeting, soldier beams, and struts to take this load.

Because of previous experience with the material at the site, R. de Charms, engineer in charge of



UP IN THE AIR—Manitowoc 3900 with 50-ft boom picks up 35-ton pipe section. Rig handles the heavy sections easily at a 27-ft radius.



DOWN INTO TRENCH—A long pipe section fits snugly between struts. It's a tight squeeze; there's only 4 in. to spare at each end.

#### HEAVY TIMBER SHEETING SHORES DEEP TRENCH . . . continued

construction for the city of Philadelphia, ordered the contractor to build a 100-ft-long test section.

H-F built the test section along a stretch where the two high pressure water lines do not parallel the trench. There was no danger of interrupting service in the lines in case the shoring failed. The test section held up fine. So the contractor got the go-ahead for the rest of the job.

To get the job started, H-F drove 14WF68 soldier beams along the entire length of the line. A crane fitted with a Vulcan No. 1 hammer drove the 30-ft-long sections. Ordinarily the soldiers penetrated about 4 ft below the bottom of the trench. In rock they were driven to refusal.

H-F started excavation at the middle of the job, and they are now working toward both ends. Cranes with clamshells dig out material to a depth of about 8 ft. The banks hold on an almost vertical slope at this depth. Then workmen place the 8-in. timber sheeting between the flanges of the soldiers to hold the ground, and continue excavation.

As excavation proceeds, the crew adds sheeting at the top of the trench, and drives it into place with a 3,000-lb drop hammer. Job-built leads consisting of scrap sections of 6-in. channel hold the hammer. A crane picks up leads and hammer and applies several blows—first at the center and then at each end—to move the timbers down into place.

After digging out the first 10 ft or so of the trench, they can gage pretty well if the soldiers are slanting in toward one another or slanting out at the bottom. If adjacent soldiers converge slightly, the crew starts sheeting with short timbers and gradually increases the length. If the soldiers slant apart, they start with longer ones. Timbers arrive at the job 18 ft long. There they are cut so that each will fit with about 3-in. bearing against the flanges at each end.

When excavation reaches 10 ft below the top of the trench, the crew places the top course of struts that span the 15-ft-wide trench between soldier beams. The struts are 8WF24 sections resting on angles welded to the faces of the soldiers and blocked tightly with steel plates. They cross the trench about 3 ft below ground level.

H-F places the lower course of struts when excavation approaches the bottom of the trench. The bottom struts are also 8WF24 sections, but they are beefed up by a 6-in. channel welded to the bottom flange of the beam.

The four cranes on the job take turns clamming out the trench and placing and driving the timber sheeting. Besides the Manitowoc 3900 that H-F brought on the job to handle the pipe sections, there are a Manitowoc 2000 and two Koehring rigs. The Manitowocs clam with 2-yd buckets; the Koehrings swing ¾-yd clams.

The piledriving crew took great pains to drive the soldier beams on line and plumb so as to avoid difficulty in placing the timber sheeting. But some of the soldiers went off somewhat none the less. To keep the timbers securely in place behind the flanges of these off-line soldiers, H-F devised a sheeting guide that could be welded to the face of the soldiers.

The guide consists of 3½x2½-in. angles spaced at 9-in. centers and a 1%-in.-wide steel flat. The flat is held by the angles at a distance of 3 in. from the edge of the flange. This guide keeps the timbers from slipping out from between the flanges of soldier beams that went off plumb during driving.

The excavation was not all easy. Material is mostly sand with some layers of hard, sticky clay. But near the bottom they hit rock in several places. The rock is an undulating stratum of hard mica shist and granite that crops up above the bottom of the trench.

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When the crews hit rock they stop the sheeting and start cutting out the rock with heavy-duty paving breakers. Jackhammers drill holes for occasional light blasting. Two crews heap the fragmented rock at the bottom of the trench for removal by clamshell. One crane stays behind to handle the rock excavation; the others move ahead to the sections where digging is easy. Altogether H-F expects that about 20% of the total 40,000 yd of excavation will be rock.

continued on page 162



## New JOHN DEERE 5-Position BACKHOE Shifts Boom in 15 Minutes!

Linished that job of flush digging already? To change the boom mounting for a different job with the John Deere 51 Backhoe, here's all that's required: Just drop the bucket to the opposite side, remove four bolts and slide the boom mounting wherever you want it on the pad... using the boom's own hydraulic power. All hydraulic connections stay intact. At the outside, it's a 15-minute job for one man, using only a wrench.

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#### HEAVY TIMBER SHEETING SHORES DEEP TRENCH . . . continued



BACKFILLING THE TRENCH—Allis-Chalmers front-end loader dumps fill in the trench. It also helps compact the upper levels of the fill by running back and forth across it.

In one spot they ran into quite different conditions. They hit quicksand. When the shoring began to settle slightly, H-F placed a heavy 12x16-in. timber across the trench at the top. Cable slings from the timber looped around the struts between soldiers to hold the shoring and prevent settlement.

#### Pumps Go to Work

To relieve the hydraulic head in the material at the bottom of the trench, H-F clammed out a ditch along the center of the trench and pumped it out. This drew down the water behind the sheeting. Then the material beneath the bottom timbers could be undercut without caving. In this way, working carefully to avoid runs at the bottom of the sheeting, H-F got through the stretch of quick-sand without trouble.

To hold the pipe sections in the short section of soft ground, H-F drove 12-in. H-piles to rock. Three bents made up of four piles spaced at  $2\frac{1}{2}$ -ft centers across the trench

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> Orfei & Mariani and Sons, Inc., St. Paul general contractors, encountered excessive water and quicksand on a sewer job. They put their American 700 Series Dragline-with 21/2-yd. bucket-on the job . . . trenched down 50 ft. while dewatering the area. Then, working through a cassion, the American clamshelled to grade-added a gravel support base and set the 48" pipe. "We're very satisfied with our Americans," says Geno Orfei. "A real machine-best brakes I've seen," says operator John Schadow. Americans prove their performance and efficiency on tough excavation and construction jobs ... capacities start at ½-yd., 12½ tons!

> PERFECT CONTROL of the American 300 Series Cranes keeps heavy material moving fast . . . jobs on schedule! American Crawler and Truck Cranes accommodate all fronts -provide the right capacity for your job. Get all the facts on a complete crane-excavator line from your nearby American distributor-he's on call!

Orfei & Mariani used an American 100 Series Truck Crane to jet in the well points required to dewater the area. Low boom operation permits long reach. Operator Robert Cofield says the American, "... handles real nice—very easy to operate." American ican simplicity gives owners high production with low initial and upkeep costs.

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AMERICAN HOIST Special materials handling equipment

CROSBY-LAUGHLIN DIVISION Drop forged fittings for wire rope-chain

#### HEAVY TIMBER SHEETING SHORES DEEP TRENCH . . . continued

hold each of the three sections of pipe in the quicksand area.

Five pumps stationed at intervals along the trench take care of the excess ground water that collects in pools at the bottom of the trench. Short 1%-in. wood blocks inserted between the timbers leave a gap for the water to seep through. The pumps are Gorman-Rupp and Gould diaphragm pumps, varying in size from 3 to 4 in.

#### Placing the Pipe

The Manitowoc 3900 picks up the pipe with a special sling and lowers it into the trench. Fitted with a 50-ft boom, the crane handles the 35-ton pipe sections at a radius of 27 ft with no trouble. The sling consists of two loops of cable suspended from the hoist line—one on each side of the pipe—and one loop crossing underneath the pipe. The loops join at

the sides of the pipe at a saddleshaped block mounting two halfsheaves.

Lowering the pipe sections to the bottom of the trench takes only about 10 min. Including a tongue at one end, each pipe section is 16-ft, 7-in. long. It fits between the struts with about 4 in. to spare at each end.

When the pipe is resting on the bottom of the trench, the crew slides it into place so that its tongue fits inside the bell of the preceding section. They use a come-along to move the heavy sections.

The Lock-Joint pipe is a 10-in, thick concrete cylinder, reinforced near the inside edge with a steel tube and prestressed around the circumference with high tensile wires embedded in the concrete about 2 in. The pipe is designed to withstand an internal pressure of 50 psi.

#### Backfilling

When the pipe sections are in place and the joints grouted, the contractor begins backfilling the trench. A crew places soil around the sides of the pipe and tamps it with hand and pneumatic compactors. When backfill reaches the top of the pipe, they take out the lower struts between soldiers and continue backfilling with an Allis-Chalmers front-end loader working in the trench.

The loader brings the fill up lift by lift, compacting it with its own weight as it runs back and forth over it. In the upper part of the trench, the crew again uses pneumatic compactors to tamp the material beneath the top level of struts.

The job will be completed sometime next month. The \$1.1-million pipeline contract is part of the expansion of the Torresdale Filter Plant in northeastern Philadelphia. The project will cost about \$25 million altogether and will give the city one of the country's most modern water treatment plants.

Superintendent at the site for Hughes-Foulkrod is Edward M. Cassidy. Project Engineer Harold Logan keeps in close touch with field operations. In charge for the City of Philadelphia is R. de Charms, Chief, Construction Branch, Engineering Bureau, Water Supply. He works under Philadelphia Water Commissioner Samuel Baxter.

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A Blaw-Knox 200-bbl. Hi-cement bin served as a railhead transfer unit. The two-stop batch operation included a 400-bbl. Hi-cement bin and a P-3100 G aggregate bin set with a twin aggregate weigh batcher. Batch trucks moved dry material to the Blaw-Knox 34-E Dual Drum Paver. Running on 5,000 feet of Blaw-Knox 10-inch road forms was a Blaw-Knox concrete spreader, followed by a Model XE finisher equipped with the new Blaw-Knox quick adjustable screen.

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#### Depreciation Reform -

# Why Industry Needs A Modern Tax Policy

A shockingly large proportion of our industrial plant and equipment is obsolete. As indicated by an earlier editorial in this series, over \$95 billion would have to be spent—and spent soon—to bring our industrial facilities up to the best modern standards. Yet plans for 1959 call for little more than \$30 billion of actual spending—barely enough to make a start on this backlog of modernization.

At the heart of the problem of obsolescence is a federal tax policy that discourages business from replacing inefficient facilities. It is the purpose of this editorial to spell out a tax reform Congress can make this year—with little cost in terms of tax revenue—that would go a long way toward removing the barrier to modernization of plant and equipment. This reform is a more realistic system of tax deductions for depreciation and obsolescence of productive facilities.

#### A Barrier to Modernization

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Industry abounds with examples of old and obsolete facilities—despite large expenditures made in the past few years. Two-thirds of our metalworking equipment is over ten years old. Over half the capacity of our chemical process industries was installed before December 1950. Only a minor fraction of our railroad freight moves in new freight cars or the new push-button freight yards.

The tax law bears a large part of the responsibility for this lag in modernization because of its important influence on business investment in plant and equipment. For many years the tax law has permitted as a deduction from income "a reasonable allowance" for wear and tear and obsolescence of productive facilities. These annual deductions affect business investment in several ways.

- They are the way a company recovers its investment in plant and equipment.
- They determine in large measure, the amounts of money that are spent each year to replace and modernize facilities.
- Furthermore, the schedule for depreciation often determines when a specific machine or building is actually replaced.

The law requires that depreciation deductions be spread over the "useful life" of a building or machine. But the periods of useful life for tax purposes today still depend heavily upon tables drawn up by the Treasury almost 20 years ago. These tables reflect the replacement practices of depression years. Also, they were compiled at a time when the pace of technological progress in industry was much slower than it is now. For nearly all types of equipment the indicated period of useful life is longer—sometimes much longer—than most experts consider realistic at today's rate of technological advance.

continued on next page

The result of these outmoded depreciation schedules is that the recovery of investment is dragged out, and the replacement of obsolete equipment is delayed.

#### In The Right Direction

Congress should establish, by law, the right to use shorter depreciation periods on productive equipment. It should do so in a way that would free industry from obsolete concepts of the rate of technological change and would provide incentives to install new equipment and produce new products.

The tax reform act of 1954 made some progress in this direction—but not enough. It introduced new methods for calculating depreciation—the declining balance and the sum-of-the-years' digits—which enable a business to recover most of the investment in a new facility in the early years of its useful life. However, these new methods do not accomplish their desired purpose when the supposed "useful life" is still an unrealistically long period of years.

Industry is by no means free from blame for the failure to bring depreciation policy into line with the needs of a modern, growing economy. According to Joel Barlow, president of the Tax Institute, "management has largely ignored the Commissioner's invitation . . . to come into the Internal Revenue Service office and make a case for shorter depreciable lives by establishing technological obsolescence."

The failure of many companies to see their own interest in more realistic depreciation not only holds them back from modernizing their own facilities but also lends support to the Treasury in its continued adherence to an outdated policy.

#### A Suggestion For Reform

An excellent model for reform of the depreciation policy in our tax law is the system used successfully in Canada for a decade. In Canada, all productive equipment may be depreciated at relatively fast rates assigned to each of 14 broad categories. The Canadian system permits depreciation up to twice as fast as the antiquated tables of useful

lives now followed in the U. S. It also gives the individual business far greater flexibility in determining depreciation schedules that fit its own needs and experience.

For example, in the category or "bracket" covering general machinery a taxpayer in Canada may depreciate up to 20% of the machine's value annually, on a declining balance basis. In the U. S. the fastest rate at which many types of machinery can be depreciated is only 10%. In other categories, from tools and dies to buildings and pipelines, the Canadian system also allows faster depreciation and provides greater incentive to invest in new facilities.

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The cost of this reform in terms of lower tax revenue would be small—probably less than \$500 million in the first year. And even this would merely be postponed, not permanently lost. Indeed, there is a very good prospect that tax revenue would not suffer at all. The increase in spending for new plant and equipment resulting from this tax reform would mean an increase in wages and profits—and therefore in taxes—in industries that produce machinery and other capital goods.

A realistic tax policy on depreciation would provide a badly needed incentive for industry to replace obsolete and inefficient facilities with up-to-date plants and equipment. It would step up our rate of technical advance and economic progress. And it would put U.S. industry in better shape to meet the growing competition from other countries that have grasped the advantages of fully modern technology.

This message was prepared by the McGraw-Hill Department of Economics as part of our company-wide effort to report on opportunities for modernization in industry. Permission is freely extended to newspapers, groups or individuals to quote or reprint all or part of the text.

Donald CMcGraw

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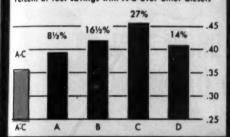
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"We can hardly believe the fuel economy, and it's doing heavy work, too," states a contractor. "Cleanest running engine we've ever seen."

"Wish we had this engine in all our equipment," says a midwestern user. "We're doing a good 25 percent more work with it — on the same amount of fuel. It's almost unbelievable!"

Greater economy, top usable power, superior starting, plus a cleaner, tougher, more serviceable design — these will put more profit in performance on your job.

Power your equipment with these new engines.

For full details, see your dealer or write for bulletin BU-540. Allis-Chalmers, Milwaukee 1, Wisconsin.

BE-14

**ALLIS-CHALMERS** 

POWER FOR A GROWING WORLD





How to Install Rock Bolts

These are the four easy steps when you install the Bethlehem wedge-type rock bolt. The 1-in. diam slotted bolt locks itself into the rock formation, anchoring the rock layers so tightly that it is virtually impossible for serious rock slides to endanger traffic.

In addition to the wedge-type bolt, Bethlehem also makes a <sup>3</sup>/<sub>4</sub>-in, diam headed bolt, used with an expansion shell. Both bolts are easy to install, and provide positive locking action.

If you would like to know more about the use of Bethlehem rock bolts in minimizing danger from rock slides, our engineering staff is at your service. Just drop a line to the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation



BETHLEHEM STEEL Wedge is inserted in slotted end of rock bolt. The 1¼-in. hole has been drilled previously, to depth 3 in. less than length of bolt.



Bolt is inserted through opening in steel anchor plate (rock anchor tie and plate may be used instead), then placed in the hole.



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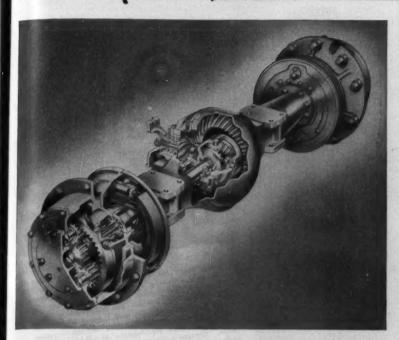
Th

Bolt can be driven by same equipment used in boring hole. Dolly protects threads. Wedge drives deep into bolt, spreading slotted portion. Impact wrench is used in tightening nut.



With the nut drawn up tightly, the steel anchor plate bears against the rock surface, providing additional support.

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#### HOW TO PUT MORE POWER WHERE THERE'S WORK TO BE DONE

Horsepower and work loads are going up. More and more strains are being put on axle shafts. And more and more ordinary axles are breaking.

You can eliminate many of these troubles with Clark Planetary Axles.

These job-proved units by putting the final power reduction in the hub. take 70% of the torque load off the shaft, They virtually eliminate shaft windup and surge, cause of most

broken axles.

If you run trucks, tractor shovels, dozers, scrapers or other heavy-duty on or off-highway vehicles, you will find it well worthwhile to get the facts on the complete line of Clark Planetary Axles-covering a range of capacities from 6500 lbs to 110,000 lbs each a combination of maximum rugged strength with minimum size and weight.



PRIMARY REDUCTION in Clark Plane tary Axles is in axle center section, by spiral bevel pinion and gear.



FINAL REDUCTION in hub, by sun gear lined to axle shaft. Ring gear is fixed; wheel is driven by three revolving planet gears.

#### **Rugged Planetary Axles Available** in Tandem, Too!

The same advantages you get with individual Clark Planetary Axles can also be yours with matched Clark Planetary Axles in tandem. Far less torque on axle shafts. Fewer broken axles. Stronger, lighter weight, in both on and off-highway rigs.

Moreover, with tandem Clark Planetary Axles, you eliminate massive axle shafts that twist and shear near differential splines. You cut deadweight, too; can haul more payload.



Clark Planetary Axles are now available in four sizes: from 28,000 lbs to 120,000 lbs ground loading capacity. All have throughtype drive for minimum mounting height and additional overhead clearance. Equalizer beam and torque rods are rubber mounted, need no lubrication. Smaller axle banjo sections provide maximum underaxle clearance. Full floating types have housings designed for static loads imposed by crane carriers and other off-highway vehicles.

#### Get a smooth flow of power

Mobile or stationary, any power plant will do more work with less wear when connected to a Clark Torque Converter. These units provide a smooth flow of power, eliminate shock-loading, reduce wear on all parts of the power train and engine. There's a Clark size to fit your needs: 15 to 800 hp, 9 to 28 inch diameters.

#### FOR FURTHER INFORMATION.

and full details on any of Clark's automotive components, simply address a card or a call to:

CLARK EQUIPMENT COMPANY

AUTOMOTIVE DIVISION Buchanan 6, Michigan





TU-YARD...

with 2-way controls, pivoting seat ...20.8 mph speeds in both directions for fast, no-turn shuttle hauling...

There's no need to turn at the loader, on the haul, or at the dump area with this big 10-yard Dumptor® because it operates with equal ease in either direction. Operator always faces direction of travel—swings around without leaving seat. Dual steering wheels, throttle, brake pedals are located at both operating positions of pivoting seat. Directional travel and speed-range lever, and dump controls, are centrally located for 2-way operation. Constant-mesh transmission with smooth torque-converter drive gives speeds up to 20.8 m.p.h. in both directions. High or low speed range controlled by easy-acting hydraulic clutches. It hauls up 28½% grades fully loaded—has 30,000-lb. payload capacity—power steering—big-safe, 4-wheel airbrakes, plus parking brake. And that's not all—there are two ways to dump—instantaneous gravity, or controlled gravity with hydraulic cylinders. See Koehring distributor about it, or send for literature.



KOEHRING

Division of Koehring Co.,

MILWAUKEE 16, WISCONSIN

6-YARD Companion-model

O Dumptor also offers cost-butting advantages for your heavy-duty off-road hauling. Smaller in size but just as rugged as the larger Dumptor, it has a ton of strength for every ton of payload capacity — 6 H.P. for every ton of loaded weight. It accelerates fast — climbs 23% grades or ramps fully loaded. Has 3-speed travel in both directions—one-second gravity dump. Get all these advantages on your work—haul with Dumptor.

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#### Construction Men in the News...

#### ARBA

E. B. (BILL) CAPE, president of Gulf-Bitulithic Co. of Houston, Tex., is the new president of the Contractors' Division of the American Road Builders' Association.

Cape has been the vice president of the division. As president he succeeds Rudolph Kraemer of Edward Kraemer & Sons, Plain, Wis. Vice president R. W. Hyde, Jr., of Hyde Construction Co., Jackson, Miss., was re-elected for a one-year term. James E. Lambert of Lambert Construction Co., White River Junction, Vt., is the new vice president, replacing Cape.

Cape is a graduate of Texas A&M and worked as a field construction supervisor, assistant construction engineer, and materials and tests engineer for the Texas Highway Department. Later he became first district engineer for the Asphalt Institute, then a district paving engineer for the Corps of Engineers.

During his World War II service with the Corps of Engineers he was in charge of highway construction for the Persian Gulf Command, then head of the engi-

neering and construction division.

He is president of the Texas Highway and Heavy Chapter of the Associated General Contractors of America and vice chairman of the Highway Committee of the Houston Chamber of Commerce.

Contractors named directors for three-year terms are: J. W. Allen of Brinson-Allen Construction Co., Tampa, Fla.; A. R. Ramser of Standard Paving Co., Chicago, Ill.; Robert P. Bayard of Johnson, Drake and Piper, Inc., New York, N.Y.; John T. Kirby of S. E. Johnson Co., Maumee, O.; T. F. Hobart of Southern Amiesite Asphalt Co., Birmingham, Ala.; Hugh McMillan, El Paso, Tex.; Robert W. Mayer, Cadillac, Mich.; and Philip V. Corey of W. H. Hinman, Inc., Westbrook, Me.

Directors at large for one-year terms are: Donald B. Stabler, Harrisburg, Pa.; R. A. Bowen of R. W. Bowen, Inc., Macon, Ga.; W. J. Troup, Jr., of Troup Brothers, Inc., Macon, Ga.; H. C. Adams of Carey Construction Co. and H. C. Adams, Lexington, Ky.; John P. Keeley, Keeley Construction Co., Clarksburg, W. Va.; Sidney R. Johnston, Arlington, Va.; and John C. Ryan of the John C. Ryan Construction Co., Phoenix, Ariz.



The original washerless coupling that is unequalled for safety in every high pressure service, and will therefore serve with exceptional efficiency and economy on all low-pressure applications. Built to withstand hard use and rough handling. Ground-joint union between stem and spud provides leak-proof, trouble-free seal...no lostor worm-out washers to replace. All parts malleable iron or steels, thoroughly russproofed. Furnished with superstrong "Boss" Offset and Interlocking Clamps. Sizes ¼ " to 6", inclusive.

#### Alaska AGC



LLOYD W. MARTIN, new president of the Alaska chapter of the Associated General Contractors of America, is the first resident Alaskan to hold the post since the chapter was founded in 1949. He heads Reed & Martin, Inc., Fairbanks general contractors.

Martin was born and educated in Alabama and engaged in construction in that state between 1938 and 1942 when he entered the United States Army. The Army assigned him to Alaska where he served as an officer in the Corps of Engineers at Adak in the Aleutian Islands and, later, at Ladd Field in Fairbanks.

The Army released him from active duty in 1946 but retained him in a civilian capacity as the first resident engineer at Ladd Field, now Ladd Air Force Base.

Martin remained at Ladd until 1948. At that time he and Lawrence L. Reed formed Reed & Martin

#### California AGC

BRUCE McKENZIE, former manager of the Central California Chapter, Associated General Contractors of America, will manage the newly formed Northern and Central California Chapter of AGC, a consolidation of the northern and central California chapters. The new group represents almost 400 contractors in building and heavy construction.

continued on next page

## COMPANION MALE COUPLING "BOSS", STYLE MX-16



Companion coupling for "GJ-Boss", described above, and "Boss" Washer Type Couplings Style W-16. Will prove equally efficient and economical for all applications where standard iron pipe nipples are normally used. Each size fits same size hose . . . oversize hose not required. Coupling consists of LP.T. male stem and "Boss" Offset and Interlocking Clamp. Steel or malleable iron, thoroughly rustproofed. Sizes ¼ " to 6", inclusive.

Stocked by Manufacturers and Distributors of Mechanical Rubber Goods



Officers of the new chapter are: president, Milt Simpson, Ball & Simpson; vice president, Curtis E. Smith, Jr., Dinwiddie Construction Co.; vice president and chairman of the building division, Paul A. Elsner, Swinerton & Walberg; vice president and chairman of the highway division, John Delphia, Patterson; vice president and chairman of the highway division, J. P. Silverstri, Charles L. Harney, Inc.; Frank Callahan, former manager of the northern California group, administrator.

#### **AGC Division Heads**

Division heads for the Associated General Contractors of America assisting new President James W. Cawdrey of Seattle, Wash., and Vice President John A. Volpe of Malden, Mass., during 1959 will be:

Robert W. Long, Long Construction Co., Kansas City, Mo, chairman, and Carl W. Olson, Olson Construction Co., Lincoln, Neb., vice chairman, the Building Contractors' Division;

J. P. Gibbons, Gibbons & Reed, Salt Lake City, chairman, and H. O. Royden, Royden Construction Co., Phoenix, Ariz., vice chairman, the Highway Contractors' Division:

Howard H. Sturdy, Dravo Corp., Pittsburgh, chairman, and Charles Keller, Jr., Keller Construction Co., New Orleans, vice chairman, the Heavy Construction and Railroad Contractors' Division.

#### Utah

ALFRED K. ALLEN is a new vice president of Utah Construction Co.

He had been on the staff of Utah's construction division since February, 1958. Before that he was chief engineer and, since 1950, vice president of Dunn Construction Co., Birmingham, Ala.

During World War II, Allen served as a Lieutenant Colonel in the Army Corps of Engineers in Burma. He was road engineer on the construction of the Ledo Road, a 500-mi supply route.

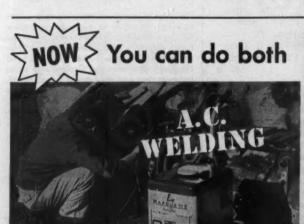
#### Pipe Line Contractors

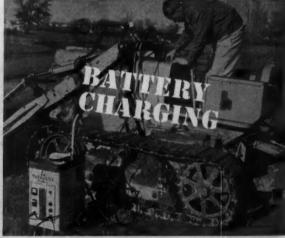


JOHN H. WILLIAM is the new president of the Pipe Line Contractors Association. Williams is head of Williams Brothers Company of Tulsa, Oklahoma.

#### The Beavers

RAY F. RASEY is the new president of The Beavers, an association of west coast heavy construction men. He succeeds John M. Sawyer.





#### .. with One Unit!

#### The MARQUETTE Redi-Arc

Here it is! The Marquette Redi-Arc unit, two high quality machines in one . . . an ideal welder for light to medium work and a fast charger for all 6 or 12 volt batteries.

WELDING: Easy-starting arc, easily maintained throughout wide 20 to 180 Ampere range. Takes electrodes of all types 1/16" that 1/16" . . . handles A.C. metallic arc welding and cutting plus arc torch brazing, soldering and heating jobs.

CHARGING: Flip a switch to use as a charger for all 6 and 12 volt batteries. Easily read, color-coded charging

rate indicator shows correct current setting. Delivers up to 50 Amperes at 6 volts, 25 Amperes at 12 volts.

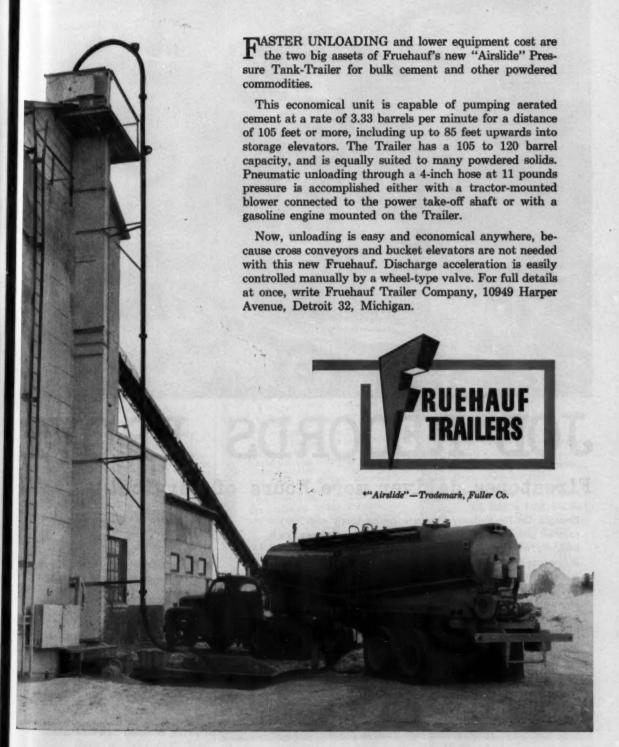
Marquette Redi-Arc Welder-Chargers give superb performance, service-free operation. See one soon...discover how you profit more with this simple, versatile machine.

#### MARQUETTE

MARQUETTE MANUFACTURING CO., INC.
DEPT. 9-410, 307 E. HENNEPIN AVE. MINNEAPOLIS 14, MINN.

## NEW FRUEHAUF "AIRSLIDE"\* PRESSURE TANK-TRAILER

... Unloads 120 Barrels In 36 Minutes!



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## JOB RECORDS PROVE

#### Firestones deliver more hours of service!

Firestone Off-The-Highway Tires are cutting hourly costs on the roughest jobs in the business! That's because every Firestone Tire is built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires! Tough Firestone treads and sidewalls defy cuts in rubble and shale. Exclusive Firestone S/F (Shock-Fortified) nylon bodies resist damage from bruising shock and impacts. And jobengineered troad designs always give the traction you need under any operating condition. Call your Firestone Dealer or Store and ask him about Firestone's full line of tubeless and tubed off-thehighway tires and on-the-job tire service.



Rock Grip Excavator\*

When ordering new equipment always specify Firestone tires—available tubeless or tubed



Enjoy the Vaice of Firestone on ABC television every Monday ev Copyright 1959, The Firestone Tire & Rubber Company

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#### Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distributors, sales personnel and other activities.

#### **Distributor Appointments**

Worthington Corp.: Tri-County Contractors Supply Co. of West Springfield, Mass., and Equipment Service Co. of Pecos, Tex., have been appointed distributors of Worthington construction equipment. Transportation Equipment Co. of New Orleans, La., will handle distribution of truck mixers and big mixers in the States of Louisiana and Mississippi.

Yale & Towne Mfg. Co.: Lift Truck Service Corp. of Fresno, Modesto, and Stockton, Calif., has been named franchise representative for Yale industrial lift trucks and tractor shovels in Central California. The Construction Equipment Co., Ltd., of Montreal, Can., has been appointed distributor for the Trojan tractor shovel line in the provinces of Quebec, Nova Scotia, Manitoba, Saskatchewan, and Alberta.

Clark Equipment Co.: The following five distributors for the Michigan line have been appointed: Reynolds Machinery Co. of Omaha, Neb.; McAllister Equipment Co. of Melrose Park, Ill.; Allied Equipment Corp. of Carnegie, Pa.; Wright-Thomas Equipment Co. of Charleston, W. Va.; and Road Machinery & Supplies Co. of Minneapolis, Minn.

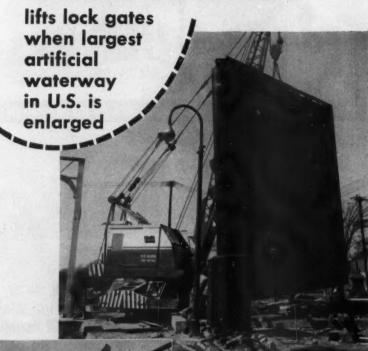
Reading Body Works, Inc.: Eight new distributors have been appointed to handle the Reading line of truck bodies. They are: Farm Equipment Co. of Erie, Pa.; Machine and Welding Co. of Dunn, N. C.; Seguin Truck Body Builders of New Bedford, Mass.; Stewart Equipment Co. of Charleston, W. Va.; Texas Hydraulic and Equipment Co. of Dallas, Tex.; Truck Equipment Headquarters, of Washington, D. C.; Warner Fruehauf Trailer Co. of Baltimore, Md.; Weaver Trailer and Body Co. of Columbus, Ohio.

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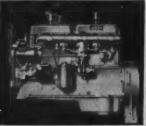
## WAUKESHA powered

#### **MARION** Truck Crane



● To handle the huge gates for locks in the New York Barge Canal expansion project—R. D. Golden Co. used this Waukesha-powered 40-ton Marion type 43-M mobile truck crane. With its Waukesha engine powering the 40-ft. boom, at 64° and at a 22-ft. radius—the 30 x 45 x 2 ft., 32-ton gates were lifted with ease, swung and lowered into position. This mobile Marion unit is mounted on a Hendrickson Carrier powered by a Waukesha 145-GK Engine. The upper frame has a Waukesha 140-GK Engine and Twin Disc torque converter.

Powering Crane (boom) – 140-GK Waukesha Gasoline, six cylinders, 4½-in.x5½-in.,525cu,in,displacement.



Send for Engine Bulletins 1548 1551

for the line ins

Powering the Carrier – 145-GK Waukesha Gasoline, six cylinders

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN NEW YORK TULSA LOS ANGELES

Factories Waukesha, Wisconsin, and Clinton, Iowa

#### SALES AND SERVICE . . .

Western Machinery Co.: Wemco has named the following five distributors for its line of aggregate processing equipment: The Seitz Machinery Co. of Billings and Great Falls, Mont.; White Star Machinery & Supply Co. of Wichita, Kan.; Parker - Danner Co. of Hyde Park, Mass.; Southern Machinery & Supply Co. of Roanoke, Va.; and the Mitchell Distributing Co. of Charlotte, N. C.

#### On the Sales Front

The Warner & Swasey Co.: The company, in reorganizing its regional office setup to handle the combined Gradall and Hopto lines. has divided the U.S. into eight territories with headquarters in the following cities: Los Angeles, Houston, Chicago, Cleveland. Philadelphia, Denver, East Orange, N. J., and Atlanta. The following men have been reassigned: Ed E. Bloniarz, formerly in Boston, is now district representative in Syracuse; Robert R. Nicholson has been appointed to the Houston office; E. J. Sehl, formerly at Cedar Rapids, Iowa, is now in the Denver office; Troy G. Sitter has been transferred to the San Francisco office; and Cyril Smith has been transferred to Boston.

Insley Mfg. Corp.: E. H. (Curly) Herman is the new east coast district sales representative in Indianapolis, Ind. His territory includes the east coast area and the provinces of Ontario and Quebec in Canada.

Hawkeye Products Corp.: Robert A. Shuey, Jr., has been appointed area sales representative in Dallas. His territory will include Texas, eastern New Mexico, Louisiana, and Oklahoma.

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T. L. Smith Co.: Richard R. Bains has been appointed sales manager for turbine type mixers. He has been with the organization since 1953 in the position of sales promotion manager.

H. K. Porter Co.: The following sales representatives have been appointed by the Leschen Wire Rope Division: Howard H. Sanders, covering southern Texas; Jack T. Dilke, covering central and western California, Nevada,



Rough going? You bet! That's why Thiele Kaolin Company specified a torque converter drive in this Allis-Chalmers HD-16 Tractor.

# "Our HD-16 with torque converter drive keeps going on the roughest jobs!"

says Owen Robinson, Mine Superintendent, Thiele Kaolin Company

"We believe our torque converter equipped Allis-Chalmers HD-16 Tractor is the best," states Mr. Robinson. "Kaolin, the white clay used in making paper, can really bog down ordinary machines, but not so with the HD-16. Besides, we get 25 per cent more work out of a torque converter equipped machine compared to a conventional drive tractor operating under equal conditions."

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> Owners, superintendent and operators know that Mr. Robinson's words are very much to the point. Torque converter drives in crawler tractors speed work and save operating costs. Without equal in push-loading (by matching tractor speed to that of the scraper), torque converter equipped

tractors excel in other service as well by permitting the engine to operate in its most efficient speed range at all times. The torque converter matches power automatically to load demands . . . providing up to 6:1 torque multiplication (Twin Disc Three-Stage) when required. Heavy load pick-up is smooth and even without clutch slippage . . . for better over-all flotation. And the operator can put in a good day's work and still feel like an evening out!

Allis-Chalmers offers a torque converter as optional on the HD-16 and as standard equipment on the bigger HD-21. And all three leading crawler tractor manufacturers, including Allis-Chalmers, standardize on Twin

Disc Torque Converter components for their torque converter equipped machines.

Be sure to specify a torque converter in your next machine. See for yourself how a torque converter cuts costs, brings in big profits.



TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division) Rockford, Illinois



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### SALES AND SERVICE . . .

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Utah, and southeastern Idaho; J. Gregory Tierney, covering Indiana, southern Illinois, and western Kentucky.

Owatonna Tool Co.: Jack Scudder has been appointed district manager for North and South Carolina. He is now living in Carrollton, Ga.

### In the Main Office

Quick-Way Shovel Co.: As a result of last year's operating agreement between Penn Texas and H&B American Machine Co., a new top management group has been announced for Quick-Way. The new board is composed of Alfons Landa and Robert C. Finkelstein of Penn Texas and Gilbert S. Rigdon and David E. Bright of H&B. Officers of Quick-Way now are Robert C. Finkelstein, president; Gilbert S. Rigdon, executive vice president; Walter O. Lampl, vice president: Henry L. Heymann, secretary; John E. Gorsuch, assistant secretary; and David E. Bright, treas-

### Associations:

Associated Equipment Distributers: A record 4,200 delegates, representing 700 distributor firms and 350 manufacturers, elected the following slate of officers at this year's annual meeting: F. J. Fitzpatrick of Parker-Danner Co., president; J. A. Benson of Benson Tractor Co., executive vice president; H. J. Mayer of Western Machinery Co., vice president; R. F. Newlin of Newlin Machinery Corp., vice president; J. A. Young of R. J. Fyfe Equipment Ltd., vice president; and Braxton Blalock. Jr., of Blalock Machinery and Equipment Co., treasurer.

#### **Special Mention**

Koehring Co.: Koehring has purchased the Stardrill-Keystone Co. of Beaver Falls, Penn., for a price in excess of \$1 million. Stardrill-Keystone manufactures and assembles every type of machine used in drilling water wells, as well as quarry and construction drills and rigs. The line includes rotary drilling machines that use either fluid or air, reverse circulation rotary drills, and multiple method machines that combine the percussion, rotary and reverse rotary principles.



### **BRUNSON TRANSITS**

go to extremes to prove

# **LASTING ACCURACY**

Only instruments of Brunson design could

weather temperatures from -70° to +160°, withstand 350 days of punishing dust bombardment!

In severe tests and in years of the hardest field service, Brunson instruments have proved their lasting accuracy and operability under extreme conditions. The reason: Brunson's unique ball bearing construction!

Located in the spindle and telescope axis, Brunson ball bearings are permanently lubricated by an all-temperature lubricant and sealed against moisture and dust. Wear is practically eliminated. Preloaded and accurate to 5-millionths of an inch, these bearings provide highest possible instrument accuracy.

Brunson ball bearing construction costs you no more—offers much more in accurate, trouble-free performance.
Why not mail the coupon, right now?



Offices in Principal In Canada: 105 Ch	ompany, Inc., Dept. 4-EE Mount Prospect, Illinois U.S. Ciffes worch St., Toronto 1, Ont. ne more information on	Brunson surveying
Nume	Title	
Company		
Address		Minute III
City	County	State

## Construction Equipment News...



# Backhoe Works In Close Quarters

International's new Pippin 260 backhoe is designed to work close to the tractor and to reach back under sidewalks and drives. The unit has a 14%-ft reach at ground level and a 180-deg swing. Maximum digging depth is 12½ ft.

The new backhoe can be used on International 240, 340, and 460 Utility tractors equipped with a front counterweight box, or the hoe can be mounted on these rigs in combination with a front-end loader or dozer blade. Numerous buckets and attachments are available, including regular buckets in 2.1 to 4.5-cu ft sizes, a special 5.1-cu ft shovel bucket, and a 54-in. backfill blade. — International Harvester Co., 180 North Michigan Ave., Chicago, Ill.

# Tractor-Scraper Travels at High Speeds

A major addition to Caterpillar's equipment line-up is a new two-wheel tractor-scraper combination. The maker says the new earthmover will operate safely at speeds formerly possible only with four-wheel hauling units. Top speed of the rig is 30.2 mph.

Powering the No. 619 tractor is a 225-hp turbocharged diesel, matched to the demands of the 14-cu yd struck capacity of the No. 442 scraper. Other engine features include dry-type air cleaner, and aluminum alloy pistons. Transmission provides six forward and two reverse speeds.

The scraper's heaped capacity is 18 cu yd. Its draft frame is of single-unit construction for maximum strength. Apron opening is 5 ft 4 in. Adjustable scraper axles level the bowl.—Caterpillar Tractor Co., Peoria, Ill.



### Truck Crane's Design Makes for Better Steering

The new 30-ton, 8x4 Lorain Moto-Crane has a rocker-beam-mounted front bogie that doubles front-axle carrying capacity. This added weight in front gives better steering when the boom carries heavy loads over the rear.

The turntable on the MC-430 carrier can be located in three different positions to adapt the crane for best lifting capacities and digging ranges. For highway travel, the power-folding mast gantry lowers below cab height. The rig can work as clamshell, dragline, shovel, or hoe. Maximum speed of the carrier is 47 mph.—Thew Shovel Co., Lorain, Ohio.







### Bridge Holds 10 Tons Of Reinforcing Mesh, Dowels

Two men can unload and lay reinforcing mesh and place the necessary dowels from Cleveland Formgrader's new mesh bridge. The bridge carries up to 10 tons of mesh and dowels and attaches to either spreader or strike-off.

The manufacturer says the bridge is designed to eliminate the extra handling of reinforcing mesh, saving the labor of from three to five men. The rig can be used on roads 16 to 30 ft wide. It has a 12-ft-wide deck and four flanged wheels that move on heavy axles.—Cleveland Formgrader Co., Avon, O.

# **▼ Vulcan Pile Hammer**Has Only Four Moving Parts

Easy lubrication and maintenance are claims for Vulcan's latest pile hammer, the DGH-900. It has only four moving parts and can be disassembled in one hour or less. The differential hammer's striking power is 4,000 ft-lb. A bar-type cylinder head makes it easy to attach this automatic rig to hoisting equipment.—Vulcan Iron Works, Inc., Chicago, Ill.

continued on next page



### New Caterpillar D7 Has Turbocharged Engine

More power, less maintenance requirements, and greater lugging ability are claims for Caterpillar's D7 tractor, the third Cat tractor with turbocharged engine. The D7's engine develops 140 flywheel hp, 9% more than its predecessor. Drawbar horsepower has been increased from 102 to 112.

Ear

Caterpillar says the rig offers 19.6% more drawbar pull as the engine lugs down under load. This is 80% greater lugging ability than the earlier model. Other new features are dry air cleaner and lifetime lubricated rollers and idlers with floating-ring seal. — Caterpillar Tractor Co., Peoria, III.



### Largest Wheel Tractor In International Line

The International 660 wheel tractor, powered by a six-cylinder valve-in-head gasoline engine, produces an estimated 75 hp at the belt and 68 hp at the drawbar. The rig hits a top speed of 16.5 mph under load.

Largest wheel tractor in the IH line, the 660 can pull sheepsfoot rollers equal to those used with a crawler tractor of the 100-drawbar hp class. The unit is built to work with a ¾-cu yd International Wagner front-end loader, International Wagner and Pippin backhoes, and 4 to 8-cu-yd Johnson elevating scrapers.—International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.

# Vibrating Screed Features Device to Adjust Crown Height

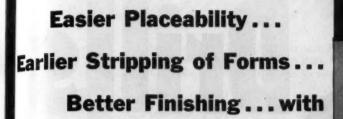
Stow's new vibrating screed has an adjustable crown assembly that makes it possible to change quickly from one crown height to another.

The device is mounted in the center of the wood beam. It is a cylinder around which the two halves of the beam pivot. By simply loosening a few bolts, jacking the center of the beam to the specified crown, and retightening the bolts any crown up to 3 in. can be obtained.

The screed is designed for spans up to 40 ft long where sag is a problem. Two 2½-hp engines with vibrators power the rig. Engines are mounted on brackets.—Stew Mfg. Co., Binghamton, N. Y.

continued on page 188





In the construction of this large, modern suburban department store, again were demonstrated the improved quality and cost benefits obtained with Pozzolith.

Besides economically providing easier placeability and better finishing, Pozzolith was an aid in obtaining high early strengths, which permitted earlier stripping of forms to speed completion of the project.

Call in any one of our more than 100 full-time field technical men to discuss these and other benefits of Pozzolith for your project.

\*Pozzolith...registered trademark of The Master Builders Company for its water-reducing, air-entraining admixture for concrete. POZZOLITH\*

"May's-on-the-Heights"—Suburban
Department Store, Cleveland, Ohio
Architect: Victor Gruen Associates,

Detroit, Michigan
Associate Architect: Jack Alan Bialosky,
Cleveland
General Contractor: Sam W. Emerson.
Company, Cleveland



THE MASTER BUILDERS COMPANY

DIVISION OF AMERICAN-MARIETTA CO.

General Offices: Cleveland 3, Ohio • Toronto 9, Ontario • Export: New York 17, N. Y.

Branch Offices In All Principal Cities • Cable: Mastmethod, N. Y.

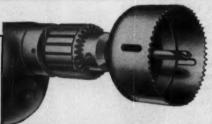


SIOUX ELECTRIC SCREWDRIVERS

NO. 260 - 262

On No. 260 been Screwdriver the operator controls the tightness with which a screw is set by the amount of pressure he applies. The ¼" Hex Drive takes shanks for clutch head screwdriver bits, Reed and Prince, Standard screws, Phillips, and socket head (Allen Type). On the No. 262 Super Screwdriver tightness is pre-determined by adjusting the clutch. Both models equipped with reversing switch.

It fits the hand, and operates in restricted space like no other electric screwdriver. It quickly drives or removes all types of screws. No. 242 has a positive clutch; the operator controls the tightness by the amount of pressure applied. No. 246 has an adjustable clutch, so that it can be preset for any uniform degree of tightness desired.



#### SIOUX HIGH-SPEED STEEL TEETH HOLE SAWS

will cut holes from ¾" to 6" in diameter, in any free machining material to a depth of 1¼". Alloy or stainless steel may be cut at slow speed. High-Speed teeth welded to chromevanadium body give maximum life and cutting

### POWER\* SPECIFICATIONS SIOUX ELECTRIC DRILLS

When it's a SIOUX you know what it will do							
Catalog Number	No Load Speed	H.P. and		Oz. Ft. Torque at Load Speed	H.P. and		Oz. Ft. Torque Peak Loa
1475	2250	5/64	1525	4.9	7/64	1050	8.8
1480	1600	7/64	1140	7.9	5/32	790	16.8
1485	1650	3/32	1060	6.9	1/8	620	16.7
1495	1650	3/32	1060	6.9	1/8	620	16.7
1498	400	3/16	275	45.0	9/32	215	108.0
1510	525	27/64	370	95.0	39/64	230	222.0
1517	925	13/32	670	49.0	9/16	540	135.0
1519	1250	13/32	860	37.5	9/16	500	96.0
1525	1650	5/16	1060	31.0	3/8	680	45.0
1541	925	13/32	670	49.0	9/16	540	85.0
1548	525	27/64	370	95.0	39/64	230	222.0
1550	525	7/16	325	108.0	17/32	175	252.0
1560	400	9/16	260	175.0	3/4	155	400.0
1575	400	3/4	205	308.0	1-1/8	125	748.0
1579	350	49/64	200	315.0	1-9/64	115	800.0
1472	1600	13/64	960	17.8	17/64	720	32.4
1473	950	13/64	575	31.6	17/64	430	55.0
1474	625	13/64	375	44.6	17/64	280	84.2
1477	950	13/64	575	31.6	17/64	430	55.0
1478	625	13/64	375	44.6	17/64	280	84.2
1479	1600	13/64	960	17.8	17/64	720	32.4



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\*for complete specifications

SEE THE NEW SIOUX CATALOG

H.D. DRILL No. 1579 %" & %" H.D. DRILLS No. 1560, 1575 1/2" H.D. DRILL



1/2" STD. DUTY DRILL No. 1510



1/2" SLOW SPEED DRILL No. 1548



# when it's a SIOUX

You know whatitwill do!

The Horsepower and torque for each Sioux drill is rated, stated, and certified. It isn't necessary to buy just a drill. When it's a Sioux you know what it will do. See the power specifications for Sioux Electric Drills in this advertisement.

Super Powered 1/4" and 3/8" DRILLS!

Here is super power to provide all the torque necessary for any operation where this type of drill would normally be used. (See specifications) And there's a speed for every need. It's an entirely new design in which the brushes have been located at the fan position at front of the drill. The advantages include cooler running, and easier inspection and replacement of motor brushes without partial or complete disassembly of the tool. Ball and roller bearing construction, with finest precision gears and mechanical design have achieved a new high in output efficiency.



# All time sales champ The SIOUX No. 1495 1/4" ALL ANGLE DRILL

Year after year this is a top seller in the SIOUX line. It's popular with almost everyone—auto mechanic, sheet metal worker, electrician, shipbuilder, woodworker, assembly line, factory maintenance man. It fits the hand and operates in restricted space like no other tool. It's a most convenient handful of



Leading distributors everywhere display and sell Certified SIOUX power drills. AUTHORIZED SERVICE AND DISTRIBUTORS IN PRINCIPAL CITIES

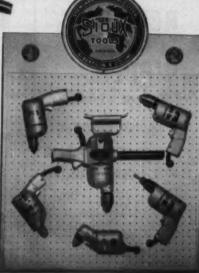
r, in any of 1½". at slow chrome-I cutting

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# ALBERTSON & CO., INC.

AIR IMPACT WRENCHES • AIR SCREWDRIVERS • "PELICAN" NUT ACCUMULATORS • ELECTRIC IMPACT WRENCHES • DRILLS • GRINDERS • SANDERS • POLISHERS • VALVE FACE GRINDING MACHINES • SCREWDRIVERS • PORTABLE SAWS • FLEXIBLE SHAFTS • ABRASIVE DISCS





%" H.D. DRILL No. 1541

1/4" H.D. DRILL No. 1525 BALL BEARING





1/4" H.D. DRILL No. 1480 SEMI BALL BEARING

1/2" LT. DUTY DRILL No. 1498





1/4" DRILL No. 1485



### **BUILT-IN RUST PROTECTION**



Blue Brute Air Tools give you a big money-saving feature—they resist rust and corrosion. The reason is an exclusive process: Blu-Coated Parts.

With Blu-Coated Parts Worthington Air Tools operate better job after job and in damp atmosphere. They resist wear, seizing, galling. They hold oil better. Even after your toughest jobs you can store them for months without deterioration.

Blu-Coated and Worthington Distributor's Guaranteed Availability Plan keep your jobs going even if your tools are in for checkup or repair. GAP works this way: 1) bring in your Blue Brute tool for repair. While it's in distributor's hands he will, 2) lend you an air tool to keep your job going. See him for complete details, about Blu-Coated, GAP, and assured parts and replacements. 60.15





This new Renner heavy duty dipper is designed to outperform under a great variety of job requirements and conditions. It weighs 1900 lbs. and is of high alloy, high carbon cast weld construction. Cost is comparable to standard bucket prices.

The dipper fits any make machine and can be had with drop forged teeth or, at a slight extra cost, with the newly designed Renner two piece shank-and-cap teeth that give longer maintenance-free service.

For detailed information ask your excavator dealer or write us direct.

RENNER MFG. CO. MILWAUKEE 18, WISC.

EQUIPMENT NEWS ... continued

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### **Bridge Column Forms**

Steel bridge column forms come in 4-ft.-high, 180-deg sections for columns up to 4 ft in diameter. Larger diameters are fabricated in 90-deg sections or less.

The forms have plate clamps on both horizontal and vertical joints. The clamps used vertically are for fast erection only—to save crane time. After the crane used in the column-form erection has been moved to other work, bolts are placed and tightened to provide full strength of form design.

To strip the forms, a crane simply lifts the form vertically as though it were a sleeve.—Economy Forms Corp., Box 128-N, Highland Park Station, Des Moines, Iowa.



### **New Cab Cover**

A new all-weather cab cover for fork lift trucks, made of heavy waterproof canvas and unbreakable glass, features four windowlike panels.

Other features are a zipper that can be opened from inside or outside the cab, and a screen insert to check the flow of carbon monoxide. In mild weather the cover can be rolled up.

Custom frameworks are available for machines not equipped with factory-made guards.—D & M Truck Top Co., 12186 Peteskey Ave., Detroit, Mich.

continued on page 190

# High-Capacity Barber-Greene Asphalt Plants Produce any Type Mix

All Barber-Greene continuous asphalt plants give maximum capacity in all size ranges for lowest cost production. They offer greater versatility than ever before available. The same mixer, without alteration, may be used with any combination of plant components to produce all types of mixes—from the simplest cold mixes to the highest types which must meet the most rigid specifications.

It is only necessary to transport and operate the components required for the job:

For cold mixes: Mixer + calibrated feeder

For intermediate hot mixes: Mixer + calibrated feeder + dryer

For high-type mixes: Mixer + gradation unit + dryer



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Plant with four-bin gradation unit for production of highest type mixes. The multiple-aggregate plant is available in all sizes.



Cold-mix plant, available in all sizes, consists of mixer and calibrated feeder. Dryer and gradation unit may be added later.

### Barber-Greene offers these advantages:

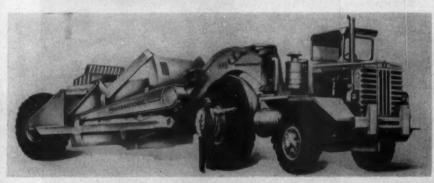
- Unequaled versatility as described above.
- New hydraulic clamshell discharge gate saves truck time, prevents segregation.
- Transfer pump assures constant head of asphalt for metering pump, eliminates need for asphalt storage tank on mixer.
- Interlocked aggregate and asphalt feeds assure constant, correct proportioning.
- Truck pit no longer required.
- Highly portable plant components allow fast travel between jobs, pay off in more days of operation per season.
- Erection is merely a matter of spotting the units at the plant site and dropping the jacklegs.
- New, easier calibration of single-aggregate and cold-mix plants.

57-12-A-B

Write for information on these flexible high-capacity asphalt plants.







### New IH Earthmovers Have Bigger Capacities

A 40.5-cu yd heaped capacity Paywagon (top) and two 31-cu yd heaped capacity Payscrapers are new International Harvester earthmoving machines.

The No. 495 Paywagon is 50 ft 4½ in. long. Its new power-opened clamshell doors permit an operator to spot dump a load or windrow material in lifts from a few inches on up.

The No. 495 Payscraper (bottom) is 50 ft 6¼ in. long, travels up to 29.1 mph, and makes a 180-deg non-stop turn within 39 ft 11¾ in. Payscraper No. 295 is 44 ft 8 in. long, travels up to 26.2 mph, and makes a full 90-deg turn. Each scraper has the new IH tapered bowl design, making possible a 131-in. cutting width.

Powering all three rigs is IH's new DT-817 diesel engine, developing 375 hp at 2,100 rpm.—International Harvester Co., Chicago 1, Ill.

continued on page 194

### Pick SURE-GRIP ACCESSORIES

### FOR BETTER CONCRETE FORMING

From one source... every accessory you need for accurate, safe and dependable concrete forming. They're made to save time... reduce your forming costs.

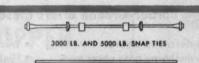
Dayton Sure-Grip accessories are accepted and specified by the nation's leading architects and engineers. National network of distributors assures prompt service.



SPECIAL SCREED CHAIRS



ADJUSTABLE SCREED CHAIRS



1/3" THROUGH 1 1/4" COIL TIES (STANDARD AND SCREW-ON CONES)

PLATE SADDLE HANGERS









Our detailing department will gladly help plan your forming requirements and layouts. Their years of experience, backed by one of the most

complete libraries of good farming practice in the country is your assurance of competent, cost saving recommendation.

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Write for your free copy of our new catalog



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cavat



THE DAYTON SURE-GRIP & SHORE COMPANY
113 KERCHER ST., MIAMISBURG, OHIO

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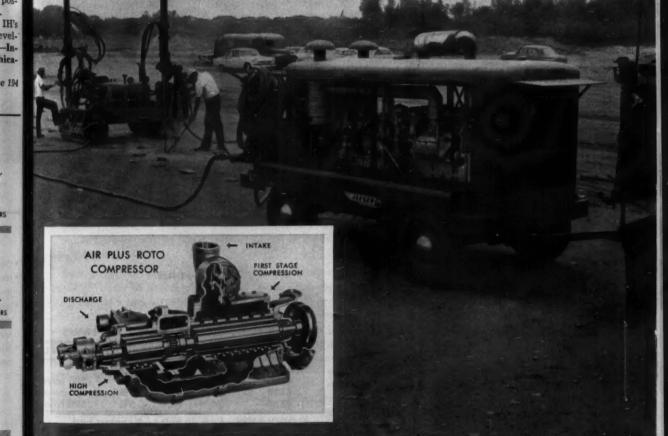
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is 44 26.2 -deg w IH The engine of this Jaeger rotary is the same GM 6-71 diesel used in other "600" compressors. But the Jaeger compressor is so much more efficient it delivers full volume at 100 rpm slower speed (1700 rpm instead of 1800). Think what this means to you in engine life and fuel consumption. Jaeger 125, 250 and 365 rotaries are comparably efficient. Ask us for full details or demonstration.



DRILLING BLAST HOLES ON 3' CENTERS for approximately 8000' of 12" to 42" sewer requiring rock excavation, at Minneapolis Airport. Holes were 3", drilled to 9' depth. Peter Lametti Construction Co., contractor.

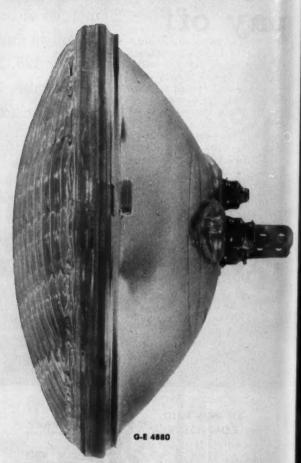
THE JAEGER MACHINE COMPANY 800 Dublin Ave., Columbus 16, Ohio

# NOW! GENERAL ELECTRIC OFFERS A COMPLETE LINE OF All-Glass Construction Lamps

- √ Far-seeing flat beam
- ✓ No inner bulb
- ✓ Reflectors never need cleaning
- ✓ Spattering won't crack lens
- ✓ Maintenance greatly reduced
- ✓ See better in all kinds of weather
- √ 6, 12, 24-volt size

General Electric now offers a complete line of all-glass lamps—especially designed for high-speed, off-highway earth moving equipment. They all feature high candle-power plus a flat, far-seeing beam. Special filament shield blocks stray upward light, reduces "bounce-back" glare, lets operators see better in any weather . . . even in dust!

Whatever the job, a G-E all-glass C.I.M. Lamp will provide the best light for it. Nothing gets past the hermetic seal of lens to reflector, so reflectors never need cleaning. No inner bulb to blacken; special hard glass won't crack in rain or snow, and they take rough treatment day after day. Choose from a wide range of sizes and styles, and specify the right all-glass lamp for any construction, mining and industrial equipment. Ask your G-E supplier for full information. General Electric Co., Miniature Lamp Dept., Nela Park, Cleveland 12, Ohio.



#### SPECIFICATIONS FOR G-E C.I.M. LAMPS

G-E No.	Circuit Volts	Watts	Bulb Dia.	Designed Life
HEADLAM	PS	60000		TENESTICAL O
4080	6	50	534"	500 hours
4480	12	60	53/4"	500 hours
4880	24	60	53/4"	500 hours
FLOODLA	MPS-PAR 46	bulbs-	-2 contac	t lugs
4078	6	50	53/4"	500 hours
4478	12	60	53/4"	500 hours
4578	24	60	53/4"	500 hours

Progress Is Our Most Important Product

inch

CO

van





Each of the compactor units employed in the workheads of these machines supplies FORTY-TWO HUNDRED 6,000 lb. VIBRATORY BLOWS PER MINUTE and achieves maximum density of any granular material used in base courses and fills in the fastest possible time.

Each compactor unit may be operated independently and hence units may be detached from the maximum coverage arrangement of 6 units in the workhead (13', 3") to ideally fit each job; or they may be regrouped in a wide variety of tandem arrangements for more rapid densification of narrower areas. And in the case of the TRAILER COMPACTOR as many as eight compactor units may be employed in two workheads of 4 each — one in front and the other following the trailer.

Life

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NEWLY DESIGNED COMPACTOR BASES PERMIT OPERATION OF BOTH THE MULTIPLE AND TRAILER COMPACTORS IN EITHER DIRECTION — NO DEADHEADING OR TURNING REQUIRED.

Used on nearly all of the nation's major highway projects, including the AASHO Test Road, the JACKSON MULTIPLE COMPACTOR has thoroughly demonstrated the outstanding advantages of this method of compaction. With the advent of the JACKSON TRAILER COMPACTOR it is conveniently adaptable to paving projects of nearly every type and size.



JACKSON TRAILER COMPACTOR — May be pushed or pulled by any prime mover capable of working speeds as low as 50 F.P.M. Towed to location at any road speed . . . operated in either direction . . . controlled by operator of prime mover. Power plant supplies both single and 3-phase 110-150 volt, 60-80 cycle A.C. and has many uses.

FOR SALE OR RENT FROM YOUR JACKSON DISTRIBUTOR. Name and descriptive literature sent on request.

JACKSON VIBRATORS



Austin-Western hydraulic crane gently lawers a 3-ton block of concrete into place on flat bed truck.

# Austin-Western hydraulic crane does anything . . . goes anywhere on \$6,500,000 highway project

"It's fast, mobile and versatile. We use the Austin-Western hydraulic crane to do just about everything on the job," reports Norman J. Maggione, general superintendent and vice president of the Bero Construction Co., Waterloo, N.Y.

#### Two places at once

Bero's \$6,500,000 project, a part of the Niagara section of the New York Thruway calls for six bridges in 1½ miles. Mr. Maggione says, "We have one A-W crane on the job and wish we had more. Our job is split in sections by railroad yards and city streets. Because of their speed and mobility, the self-propelled, rubber-mounted A-Ws can just about be in two places at once.

"Using the A-W crane has doubled our speed in setting bridge panels. It maneuvers easily among tubular pilings and can turn on a dime. It has plenty of traction and power on any type surface.

### Economical to operate, maintain

"We've got lots of economy right along with outstanding job performance. One man on an A-W can often do the work of four. We haven't had any maintenance problems.

"The A-Ws are radio-dispatched. People are always calling for one to get them out of a spot or to speed things up. It's the most versatile piece of equipment on the job!"

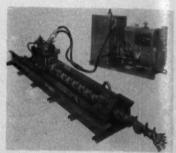
Learn more about this Model 210 hydraulic controlled precision crane with 18-ft. telescoping boom and 360° swing, all-wheel drive and steering. Contact your nearby Austin-Western distributor or write us today.

Austin Western

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

EQUIPMENT NEWS... continued from page 190



### Trench Drill Also Places Pipe

A new trench drill advances pipe underground as it drills, permitting contractors to drill without breaking pavement or disturbing the ground surface. According to the maker, the unit has drilled and pushed pipe as far as 250 ft.

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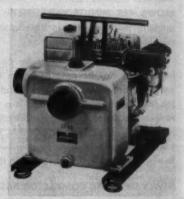
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Fas Rd.,

A sideboom tractor or a truckmounted winch can place the drill in the trench. The auger rotates inside the pipe and advances the pipe as it inches forward. And the auger flights feed the drilled earth back through the pipe. Additional augers and pipe sections are added as the hole is bored and pipe advanced.

Available in this line of Salem trench drills are four models, offering a choice of augers from 4 in. to 36 in. in diameter and from 2 to 6 ft in length.—Salem Tool Co., Salem, Ohio.



### Light Aluminum Pump

A new aluminum pump weighs less than 100 lb and is rated at 18,000 gph. It's a 3-in. model, powered by a four-cycle engine. Also available in the new line is a 2-in. aluminum pump, rated at 12,000 gph.

The manufacturer claims all wearing parts of the pumps can

be replaced easily without replacing the main castings.-Midland Products Co., Midland Park, N.J.



### **New Waler Bracket**

A new waler bracket eliminates the danger of toe-nailed walers separating from the studs. The waler bracket is a heavy malleable casting and can be reused indefinitely.

Each bracket holds two 2x4 walers. The brackets are fastened on either side of the stud with three nails. - Superior Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill.



#### Hard-Work Hammer

A new shock-absorbing hammer is now in production at Ramset. The head of the specially designed Ramset hammer is suspended from the handle, not rigidly connected to it. Elastic shocks within the head housing connect head to handle. Shocks are made of an energy-absorbing, resilient material. Called Shure-Drive, the new hammer is designed for use with Shure-Set, the hammer-in tool introduced by Ramset in 1956. The new two-pound tool will be sold separately or with Shure-Set. This fatigue-reducing hammer is best for difficult concrete and steel hammering, according to the makers.-Ramset Fastening System, 12117 Berea Rd., Cleveland 11, O.

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continued on page 199



Austin-Western 5 to 8-ton tandem roller finishes under layment for Buffalo, N.Y., overpass on New York Thruway project.

# No downtime-550 maintenance for 3 years' rugged service from Austin-Western roller

-reports Bruner Asphalt & Construction, Inc., Buffalo, N. Y.

"We've put less than \$50 into main- smooth and steady low speeds that help tenance for our 3-year-old 5 to 8-ton Austin-Western tandem roller," says General Manager George Sheperd, Bruner Asphalt & Construction, Inc., Buffalo, N. Y.

"It can be relied upon for precision compaction on every job," he tells us.

#### Saves trailer rental costs

"The A-W roller travels under its own power. It has enough road speed to move from job to job . . . saving us minimum trailer rental costs of at least \$40. It gets there just as fast as by trailer when you figure the time we would spend waiting for service then loading and unloading.

"It gears down nicely on the job to

assure precision compaction. It's a dependable piece of equipment, too. We haven't had any downtime. The service and cooperation we receive from our local A-W distributor are excellent."

#### Full line of rollers

The Austin-Western variable weight rollers are designed for finest quality compaction. They are available in 5-8, 8-12 and 10-14 tons tandem-8-11, 10-12 and 12-14 tons with 3 wheels. Also offered is a versatile 31/2 to 6-ton portable tandem roller.

For full information about this popular line of rugged variable weight rollers, contact your nearby Austin-Western dealer or write us today.



. Motor sweepers Road rollers . Hydraulic cranes THE NEW POWER CONCEPT IN THE





THE GM DIESEL



# For the first time, <u>all</u> the benefits of engine standardization are available to <u>every contractor</u> with <u>any</u> type of equipment

Now, whatever the equipment, whatever the contract calls for, there's a "Jimmy" Diesel tailored to it.

So now every contractor can standardize on GM Diesel power and buy the finest equipment available.

For example, you can power a 15-kw. generator, a 265-c.f.m. compressor, a 300-h.p. scraper, a 1200-h.p. dredge, all with "Jimmy" Diesels. And it's all top-quality equipment because it is powered by GM Diesels.

And there's good reason for standardizing on "Jimmy" Diesel power. For these engines boast an ingeniously engineered combination of new compactness, light weight, high efficiency, durability, inexpensive maintenance and lowest parts cost.

Plus one more reason—most important of all—the unmatched parts interchangeability of "Jimmy" Diesels.

GM Diesel covers the whole power spectrum with only 3 cylinder sizes—parts that fit a 33-h.p. "Jimmy" also fit a 1650-h.p. "Jimmy." So contractors can keep a minimum stock of parts—far fewer than if they used a number of different Diesels or even standardized on any other make Diesel.

If you use Diesel power for one job or a hundred in filling your contracts—there's a "Jimmy" just for you. See your nearest GM Diesel distributor for more information or write GM Diesel, Dept. C-4, Detroit 28, Michigan. Call or write today—there's money in it.



In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario Parts and Service Worldwide



NEW 71" 132 H.P. 150



"8V-71"



"6-110"



"12V-71" 224 to 504 H.F.



"16V-71"



"24V-71" (Twin 1



NEW "32V.71" (Twin 16)
" (Twin 12) 500 to 1330 H.P.



# Cleveland 110 speeds turnpike drainage improvement

Clevelands have dug many miles of trenches for U.S. highways

Versatile, efficient Cleveland Trenchers have dug thousands of miles of trenches for the construction and improvement of U.S. highways-from secondary roads to big modern turnpikes and thruways. Clevelands, like the one shown at right cutting underdrain trench adjacent to a catch basin at a turnpike interchange, are widely used to cut trench required for water drainage along U. S. roads. They're also used for restoration of farm drainage systems along rights-of-way ... for relocating intersected gas, water and oil pipelines . . . for installing highway lighting cable and conduit ... and for fast accurate cutting of shallow trench required in highway rewidening. The Job...installing drain tile along a 20-mile section of turnpike to improve surface drainage.

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The Digging...in hard shale under 10 inches of tough aggregate in the shoulder of the pike.

The Record... the Cleveland boosted trench production 300%—to 2,400 feet per day. No other type of machine previously had been able to get more than 600 feet per day.





The CLEVELAND TRENCHER co.

20100 St. Clair Avenue

Cleveland 17, Ohio



### **Expansible Hopper**

Buck Equipment Corp. now makes a floor-hopper with a basic capacity of 41 cu ft that can be increased quickly to 61 cu ft by adding a 20-cu-ft riser atop the hopper.

Also available for the hopper is a fitted lip that gives extra reach from the building and permits use of a poop deck—a combination platform and self-dumping concrete bucket. The hopper's four sides slope 60 deg and have rounded self-cleaning corners.

The hopper is available with either a 33-in. or 41-in. deck-to-gate height. Overall height is 8 ft, or 8 ft 8 in. with riser. Total weight is 930 lb.—Buck Equipment Corp., 720-X Anderson Ferry Rd., Cincinnati 38, Ohio.



#### Three New Jumbo Arms

Le Roi now makes jumbo arms with double-acting hydraulic cylinders that extend, retract, swing and elevate the arms, making possible greater drilling flexibility, more rapid positioning, and more accurate hole spacing. The air - motor - operated hydraulic pump is governed to maintain constant pressure at all times, the manufacturer says.

The jumbo arms, available in 6, 8, and 10-ft lengths, can be



# offers austempered fasteners with such superior holding power

Even under the most demanding workloads, Ramset's austempered Red-Tip fasteners assure more holding power and greater fastener strength. Austempering, Ramset's high-heat slow-quench treatment, puts extra strength, toughness and dependability into every Ramset Red-Tip fastener.

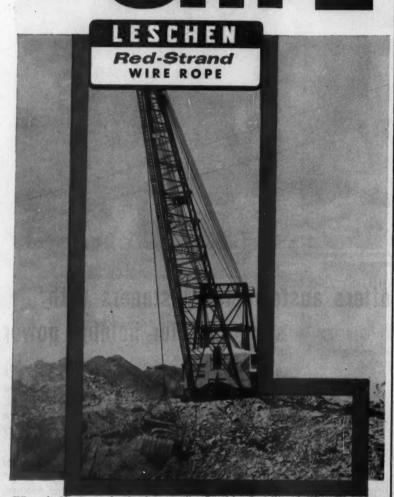
Ramset's wide variety of fastener sizes puts the *right* fastener on each job—you don't have to "make-do" with off-size pins or studs. Ramset assures positive, guaranteed fastenings into tough steel, concrete or masonry faster and easier, and at lower in-place cost. Consider Ramset's many advantages and the "100-for-100" guarantee—call your Ramset dealer (under "Tools" in Yellow Pages) for details.



in addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set® hammer-in tools for light fastening, and Ringblaster® heavy-duty kiln gun.

Ramset Fastening System

WINCHESTER-WESTERN DIVISION . OLIN MATHIESON CHEMICAL CORPORATION 12103-D BEREA ROAD . CLEVELAND, OHIO



When the bite is on the dragline, you'll be glad you rigged with Leschen—the wire rope that's the same top quality in every foot of every reel. The new Leschen wire mill is designed to deliver exactly that. New machines... new processes ... exclusive new continuous-flow technique—all as modern as tomorrow. Try

Leschen Red-Strand Wire Rope now and see how its uniform quality makes your operation safer, your replacement time farther in the future. Make your next order Leschen! Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis 12, Mo.

LESCHEN WIRE



ROPE DIVISION

H.K. PORTER COMPANY, INC.

DIVISIONS: Connors Steel, Delta-Star Electric, Disston, Forge & Fittings, Leschen Wire Rope, Mouldings, National Electric, Refractories, Riverside-Alloy Metal, Thermoid, Vulcan-Kidd Steel, H. K. Porter Company (Canada) Ltd.

EQUIPMENT NEWS ... continued

mounted on drill jumbos, crawler tractors, or truck platforms. Telescopic 4-ft extensions are available for the 8 and 10-ft models.

The rig's horizontal arm swing is 60 deg to the outside and 45 deg to the inside. Raise and lower radius totals 90 deg, or 60 deg above and 30 deg below horizontal. Controls for the jumbo arm mount on either side of the arm or on the pedestal. And a safety valve in the lift cylinder prevents arm from falling, if the hose or hydraulic system fail. Optional equipment for the arm, called the LJB, includes a 2-gal line oiler.—Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis.

### **Lightweight Paver**

Designed for use in congested urban areas is Watson's new asphalt and base paver, called the Watson-Cmetco Rola Paver. This 900-lb model rolls on its own wheels, pulled and fed by a dump truck. It is easily transported on city streets to and from the job. During transport, the Rola Paver hangs on the truck's tailgate.—H. S. Watson Co., 1316 67th St., Emeryville 8, Calif.

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# Hough Improves Payloader

The rear - wheel - drive, frontwheel-steer model H-30R replaces the Hough HF Payloader. Capacity of the new machine is 3,000 lb, and buckets from 2/3 to 2 cu yd are offered. Bucket action of the new Payloader provides 40 deg tipback, making possible larger loads than was possible with the old HF model. New features also include torque-converter with a 2.6 to 1 stall ratio and four-speed, full reversing, manually shifted transmission. Powered by a six cylinder gasoline engine, the H-30R develops 66.5 hp at 2,200 rpm. Attachments available include the Ram sweeper; the Wain-Roy



# ANNOUNCES ...

### revolutionary NEW self-erecting\* asphalt plant



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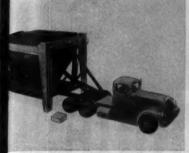
featuring:

"PUSH BUTTON ERECTION"

STANDARD presents a big, really portable batch type, self-contained Asphalt Plant that produces the same high tonnages as conventional "stack-up" plants.

Exclusive "push button erection" mechanically erects this STANDARD Model S-E Self-Erecting Asphalt Plant — no expensive cumbersome crane is needed to "stack up" the plant.

PATENT APPLIED FOR



MOBILE HOIST-AND-BIN SECTION IS MOVING INTO PLACE.



TRUCK HAS BEEN DETACHED. HOIST IS



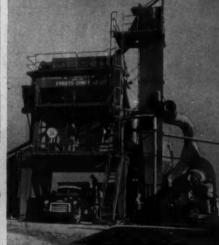
MIX-AND-WEIGH SECTION IS MOVING

Entire plant is fully portable with each section mounted on its own wheels and axles — "a complete package on wheels."

This new STANDARD Model S-E self-erecting Asphalt Plant incorporates the same self-erecting principle and rugged design as is found in the well known STANDARD Model T-M trailer-mounted Asphalt Plants.



- HOIST HAS RAISED BIN SECTION AND MIXING SECTION INTO FINAL POSITION. HOT ELEVATOR IS BEING RAISED.
- MOBILE DRYER AND DUST COLLECTOR HAVE BEEN MOVED INTO PLACE, PLANT IS IN OPERATION.



ASPHALT PLANTS

HE MODEL SE PORTABLE SELF-ERECTING ASPHALT PLANT.
ANUFACTURED IN 4000, 5000, AND 6000 POUND BATCH CAPACITIES.

### STANDARD STEEL CORPORATION

General Offices & Plant, 3089 Boyle Avenue, Les Angeles 38, California
filivest Offices & Plant LEADER IRON WORKS Decause 89, Illinois

... built to do a better job!

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PARTS WAREHOUSES IN LOS ANGELES AND DECATUR, ILLINOIS

### Attention Contractors! The New STANDARD

ORTABLE T.M. PLANT offers top production. A complete self-contained sich type Asphalt Plant...on wheels. One man operates! Has exclusive SELF-LIFT" erecting device. RUGGED – ECONOMICAL – SIMPLE. fixes up to 80 tons per hour!



ROTARY DRYERS . KILNS . COOLERS . ASPHALT PLANTS



where heavyweights roll on schedule!

Firestone Derma-fite Rims



New Firestone Earthmover Rims are stress-tested and 100% fusion-welded for maximum strength!

Firestone's new Perma-Tite rims are the strongest you've ever used! Fusion-welding from both sides gives equal weld penetration throughout the section for maximum rim dependability. The exclusive Perma-Tite air seal is absolutely airtight, insures permanent protection to mounted tires. Firestone Steel Products Company's stress testing results in rim reinforcement at high strain points. Perma-Tite earthmover rims are the truest rolling you can own—they deliver full tire support, reduce sidewall flexing and let tires run cooler for longer service. Specify Firestone Perma-Tite rims as original equipment and replacements. They're available for tubeless or tubed off-the-highway tires.

SPECIAL PROTECTION against rust and corrosion for longer rim life, better tire performance.

INTERCHANGEABLE in complete units or by components with all Earthmover rims and parts.

COMPLETE AIR SEAL insures retention of air at recommended pressures, delivers longer tire service.

FIRESTONE STEEL PRODUCTS CO. Akron 1, Ohio

INTEGRITY, ACCURACY, QUALITY, DEPENDABILITY

Page 202 — CONSTRUCTION METHODS and Equipment — April 1959



### HOSE COUPLINGS

FOR EVERY APPLICATION





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Ohio



WRITE FOR BULLETIN 34

# HOSE ACCESSORIES COMPANY

PHILADELPHIA 32, PENNA.

### **EQUIPMENT NEWS...** continued

backhoe; the new Ram Leaf loader; backfiller blade; lift fork; crane hook; rotary, V, or reversible-blade snow plows, and other items. Optional equipment includes double-acting cylinders for down-pressure, steering booster attachment, and special buckets.

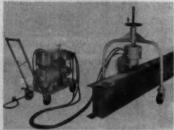
—The Frank G. Hough Co., 706 Seventh Ave., Libertyville, Ill.



### **Rotary Air Compressor**

Jaeger Machine Company's new rotary compressor delivers 75 cfm of air at 100-lb pressure. The unit replaces the company's 75-cfm reciprocating-type compressor. The new model has fewer working parts than its predecessor and is said to be completely vibration free.

The rig is oil-cooled, powered by a Continental F140 gasoline engine, and has a full load speed of 1,750 rpm. The maker says that precision controls on the compressor insure constant air pressure under all normal demands and prevent over-run and engine racing. Tool boxes and an automatic blow-down valve are standard equipment.—Jaeger Machine Co., 550 W. Spring St., Columbus, Ohio.



### **Hydraulic Steel Punches**

New W. A. Whitney portable hydraulic punches are available in a range of capacities from 5 to 90 tons. The 90-ton unit punches up to a 1 1/16-in. hole through % in., or a 1-in. hole through 1 in. of mild steel.

A complete unit consists of a



# The COMPLETE SCAFFOLDING LINE

Waco . . . the complete line of scaffolding, offers you one-source convenience and service for all scaffolding needs.

Waco scaffolding, with patented job-proven **Speedlack** is the fastest, most economical scaffolding available.

Check the yellow pages for your on-the-spot Waco Distributor. He stocks sectional steel scaffolding, rolling towers, scaffold jacks, steel post shores and allied equipment. You'll saye time and money on your next job.

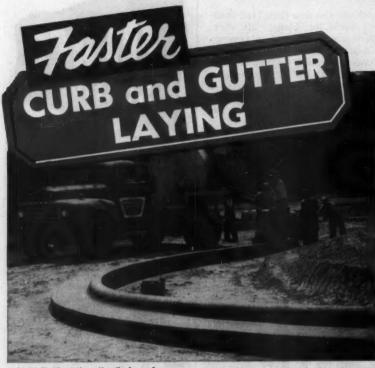
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Tubular Structures Corp. of America Los Angides, Cali Armson from Works Windsor, Ontario



Smith-Field Automatic Curb and Gutter Machine in operation,

# at LESS COST

# NO HAND FINISHING!

Lay up to 1,200 feet of integral curb and gutter per day — with no forms or hand finishing. The Smith-Field Automatic Curb and Gutter Machine is doing just that for cities, contractors, builders over the world. Savings of time, labor and material mean money on any job anywhere. The Companion machine — Stephens-Canfield Automatic Curber — lays curbing with the same dispatch, reaching as high as 3,000 feet per day.

The Smith-Field Automatic Curb and Gutter Machine uses Portland Cement Concrete. The Stephens-Canfield Automatic Curbers work equally well with either cement or asphalt mix.



LEARN about the savings — the efficiency of these machines.
Write for full details and prices.



Smith-Field Automatic Curb and Gutter Machine — Model Mark S



Stephens-Canfield Automatic Offse



Stephens-Canfield Automatic Curber
— Model 55A

E. L. HARDIN ASSOCIATES, INC.

punch with push button control box, hydraulic power unit, and connecting hydraulic lines. Punch units with from 5 to 30-ton capacity are light enough to be carried from job to job. Heavier units of 50, 70, and 90-ton capacity have the power unit mounted on a cart and the punch unit suspended from a tripod. Where a tripod cannot be used, the punch head can be suspended from a crane, hoist, or A-frame.

Cycle time of the one-man units ranges from 2 to 19 sec, depending on size. Indexing from one hole to another takes only a few seconds, according to the manufacturer. — W. A. Whitney Mfg. Co., Rockford, Ill.



### Crenlo Offers Cabs

Latest in the Crenlo line are new cabs for the three models of Caterpillar Traxcavators. Twelvegage steel is used in all body panels, and 16-gage material in the double-walled doors. Cab mounting brackets are heavyduty ¼-in. plate. Clear-view windows and windshields are vertically mounted to cut dust collection. The easy-to-install cab extends beyond hydraulic controls for easy operation of bucket. Attachments available include electric wipers, heaters, defrosters, and windshield washers.—Crenlo, Inc., Rochester, Minn.



### Outriggers Work Faster

Now available on Lorain Moto-Cranes are four hydraulically powered outriggers that move



### PROVED IN ACTION

LOS ANGELES DEPARTMENT OF WATER AND POWER, SCATTERGOOD STEAM GENERATING PLANT, EL SEGUNDO, CALIFORNIA Compacting Beach Sand For Fuel Tank Foundations

SAN DIEGO STEAM GENERATING PLANT, SAN DIEGO, CALIFORNIA

Compacting Foundation Fill For Complete Project

JAMES AND ALDRICH CONSTRUCTION COMPANY, AMARILLO AIR FORCE BASE, AMARILLO, TEXAS

Compacting Clay Soil For Jet Runways

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WALTER RADKOVICH COMPANY, CONTRACT-ORS, SANTA MONICA STORM DRAIN PROJECT, SANTA MONICA, CALIFORNIA

Re-fill And Compacting Over Concrete Drain Pipe System

RADCO CONSTRUCTION INCORPORATED, ALTADENA STORM DRAIN PROJECT, ALTA-DENA, CALIFORNIA

Re-fill And Compacting Over Concrete Drain Pipe System

# Big, Husky, Powerful

With the tremendous compaction of 580 tons of kinetic energy developed each second, the Essick 72" vibrating compactor has proven it can cut more than 50% from spreading and rolling time required by any other methods now used for compacting earth fills.

High frequency vibrations, (in contrast to low frequency vibration of other makes), together with the 580 tons of kinetic energy per second move an extra large pool of earth particles, keying them together into a dense mass ... meeting the most rigid compaction requirements in record time.

The Essick Model VR-72-T has successfully compacted lifts up to 7 feet of granular material and lifts from 2 to 5 feet of heavy soils having a clay content of more than 45%.

The VR-72-T produces maximum compaction through high frequency vibrations utilizing a scientifically engineered power transmission system. Where other equipment has failed, Essick vibrating rollers provide continuous production year after year.

The Model VR-72-T is designed for the contractor whose present equipment cannot achieve required densities... whose compaction costs are too high... whose equipment investment, operation, maintenance, haulage, and storage costs are excessive—anywhere in the compaction field where present equipment and methods are costing precious dollars, the Essick Model VR-72-T vibrating roller will do the job better at a greater profit.

OTHER VIBRATING ROLLERS 13", 28", 32" AND 54" WIDE. ALSO A COMPLETE LINE OF STATIC WEIGHT ROLLERS.

(Many Engineers are writing new specifications calling for more stringent compaction requirements. ESSICK Vibrating Rollers are consistently exceeding these requirements with fewer passes and higher lifts.)

ESSICK MANUFACTURING CO.

1950 SANTA FE AVE., LOS ANGELES 21, CALIF.

850 WOODRUFF LANE, ELIZABETH, NEW JERSEY

affiliated with the T.L. SMITH COMPANY, milwaukee, wisc.

This compact Jaeger Model 2PN, pumps all the water a 2" suction hose can handle. With  $2\frac{1}{2}$ " suction hose it pumps more than 14,000 gph.

### Now handle more water with Jaeger pumps

Today's Jaeger Sure Prime pumps deliver performance never before offered—and at slower, long-life operating speeds. For example, a Jaeger 6PH can handle 100,000 gph as a dewatering pump or deliver 975 gpm at 60 psi pressure for well point jetting or gravel washing. Base your pump buying on latest information. See your Jaeger distributor or send for catalog.

THE JAEGER MACHINE CO., 800 Dublin Avenue, Columbus 16, Ohio
AIR COMPRESSORS • MIXERS • PAVING SPREADERS and FINISHERS



F/S DISTRIBUTORS: The A. Lietz Co., San Francisco and Los Angeles, Calif.—Nationa Blue Print Co., Chicago, Ill.—Watts Instruments, Columbus, Ohio—Geo. F. Muth Co., Inc Wash., D. C.—CANADA: Instruments 1951 Ltd., Ottawa, Toronto, Regina, Montreal.

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from travel to ready-to-work position in just 76 seconds.

The outriggers are four curved beams, housed in pairs in two boxes. Powered by the hydraulic system of the carrier's steering mechanism, each beam moves at the same time in two directions—out and down—at a two-to-one ratio. The beams are operated independently from controls either in the crane carrier cab or, when alternate equipment is used, in the turntable cab. A bubble level is standard equipment.

The maker says the outriggers, called Power-Set, automatically lock in position with enough strength to jack all eight wheels of the Moto-Crane off the ground. And the outriggers' wedgelocks hold the beams so securely, says the manufacturer, that the raised crane can be swung and operated at full capacity. This jacking ability of the outriggers makes it possible to change carrier tires, or even to lift the crane out of soft ground.

For highway travel the outriggers retract, and the floats automatically fold back against the ends of the boxes for minimum road clearance. — Thew Shovel Co., Lorain, Ohio.



### Hoist For Bulky Loads

A side-mount Chicago boom, made for the Buck HoisTower, can hoist up to 1,000 lb of bulky loads such as shoring, lumber, pipe, and reinforcing steel. The boom swings 180 deg so it can be used on either side of the HoisTower.

The reversible boom can be mounted on the tower at any time.

continued on page 211

## Can your loader "lift its lip" and duplicate dozer action? No?

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Then trade it off without delay! Because you'll miss money-making opportunities right and left without this big-capacity 4-in-1 action. And you have positive "radius control" of dozing depth; plus strength for hard digging! Here, the new International Drott TD-20 4-in-1 is dozing on a heavy grading job.

## Can your loader grade and strip like a carry-type scraper? No?

Then consider what extra service—and extra-valuable service you could deliver your customers—with versatile scraper-like action at your fingertips with a moderately-priced 4-in-1! This TD-20 4-in-1 is finish-grading sticky clay around a new Cedar Rapids, Ia., factory!





# can replace up to \$100,000 of limited-duty equipment!





### Can your loader "bottom-dump" and handle sticky materials? No?

Then retire the "relic" and go modern! You can't choose the materials you excavate. You can't prevent adverse weather that makes materials sticky! But 4-in-1 bottom-dumping eliminates the sticky materials problem and gives you a vital dumping height plus advantage over ordinary roll-forward buckets.

Move the selector lever—prove to yourself only the clamaction 4-in-1 doubles for a whole spread of "big-ticket" rigs—gives instant changeovers. Compare 4-in-1 capacity and versatility to any single-action loader. Measure exclusive shock-swallowing Hydro-Spring advantages. See your International Drott Distributor for a demonstration—prove you can save up to \$100,000 on equipment!

### Does your loader have measured, advertised breakout action? No?

It's the genuine and exclusive pry-over-shoe breakout action that enables International Drott 4-in-1's to replace far costlier boom-type rigs on jobs like breaking up and loading out old pavement. The NEW TD-15 4-in-1 exerts the enormous force of 39,200 lbs.

International Harvester Company, Chicago 1, Illinois Drott Manufacturing Corp., Milwaukee 15, Wisconsin



INTERNATIONAL DROTT



PHOTOS: Left—Tamping fill around 4 ft. concrete pipe culvert on New York State Thruway Extension near West Seneca, N. Y. Right—Compacting earth fill around abutment on Benbrook Dam construction near Fort Worth, Texas.



New 6-c 2400 rps

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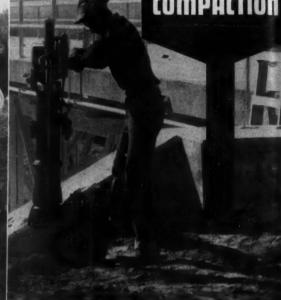
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# BARCO RAMMERS are THE ANSWER!

**YOU** can't get high degree SOIL COMPACTION by "patting it" or "shaking it." For deep, penetrating force to produce 95%, 97.5%, or even 100% compaction, Barco Rammers are THE ANSWER. For many soil conditions, they are the only answer.

THE KEY TO BETTER CONSTRUCTION—High degree soil compaction is worth every cent it costs. Barco Rammers are especially effective for compacting fill in restricted areas—close to walls, culverts, abutments, around footings, and in trenches—on all kinds of construction jobs: Toll Roads, Freeways, and Highways; Air and Missile Bases, Hydroelectric Power and Flood Control Dams, Bridges, Buildings, and Housing Developments.

**ONE MAN OPERATION**—On area tamping, one man can average 20 to 30 cubic yards of fill per hour. On 18" trench backfill, using lifts up to 24", the rate is 360 to 600 feet per hour.

ASK FOR A DEMONSTRATION—We will be glad to arrange a demonstration for you; see our nearest distributor or write. SEND FOR A COPY OF CATALOG 621.

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BARCO MANUFACTURING CO. BARCO RAMMER

for High Degree Soil Compaction



512E North Hough St., Barrington, III. BARCO VIBRA-TAMP for Granular Fill and Bituminous Surfacing

Page 208 - CONSTRUCTION METHODS and Equipment - April 1959



New 6-cyl. UC-263 develops 95 max. hp @ 2400 rpm.



# Three NEW heavy-duty International engines with long-life features

Newest heavy duty carbureted engines in the International line are two compact 6-cylinder models, the UC-263 and UC-221, rated at 95 and 75 max. hp @ 2400 rpm, and the rugged 4-cylinder 42 hp UC-135.

While these three new engines vary in power ratings and numbers of cylinders, they have much in common: fuel saving combustion on gasoline, LPG, or natural gas; efficient valve-in-head design; long-life pressure lubrication; replaceable sleeves; thorough sealing against life-shortening dust; updraft carburetion; and factory-engineered power unit components and attachments for individual requirements.

Many of the rugged features associated with diesels are found in both the new UC-263 and UC-221. These engines vary only in head and piston sections from their two interchangeable diesel counter-parts—the 95 hp UD-282 and the 75 hp UD-236.

Other features of 6-cylinder models: 7.2:1 compression ratio and 18 mm plugs for best fuel economy; fully machined combustion chambers for uniform power output; exhaust valve rotators; 12-volt starting and ignition system; low friction stepped-dome pistons; and deep I-block crankcase.

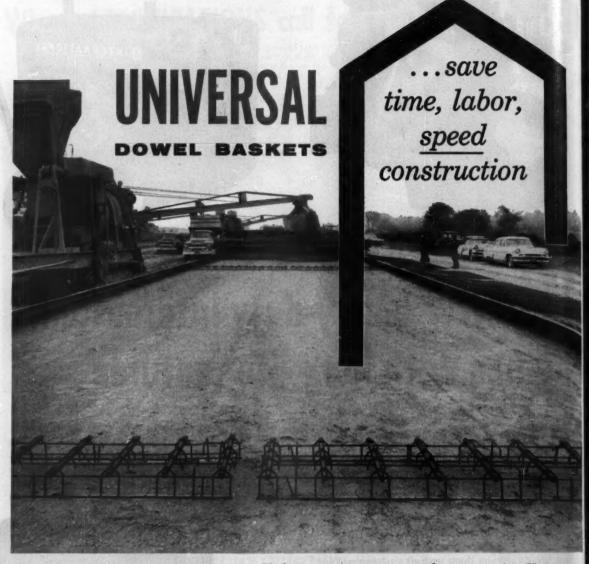
You'll see how these new engines can give you more dependable, lower cost performance in construction equipment when you get full details from your International Power Unit Distributor or Dealer. He sells and services 24 heavy duty carbureted and diesel engines from 17 to 385 max. hp. Call him soon.





International Harvester Co., 180 North Michigan Ave., Chicago 1, III.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors...Self-Propelled Scrapers and Bottom Dump Wagons...Crawler and Rubber-Tired Loaders...Off-Highway Haulers...Diesel and Carbureted Engines...Motor Trucks...Form Tractors



DESIGNED TO MEET



Highway contractors everywhere are using Universal Dowel Baskets because they are ready to use, easy to handle, accurately made, and are more economical, laid down on the job. These are heavy duty baskets . . . completely assembled, with the bar welded in position. They can't come apart, won't get out of alignment, and dowels are always held in parallel relationship. We have the experience to meet any specification and production facilities to take care of your requirements: Why not get full details today?

# UNIVERSAL

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### EQUIPMENT NEWS...

To use the boom all that is required is to attach the screw shackle on the end of the boom cable to the undercarriage of the platform—a job that takes less than 30 sec. It takes another 30 sec to unfasten the screw shackle, and the tower platform is again ready for the raising of masonry and other materials.—Buck Equipment Corp., 720-X Anderson Ferry Rd., Cincinnati 38, Ohio.



### Lightweight Bucket

Lightweight dragline buckets for easy and medium digging range in size from % to 3½ yd. The manufacturer says the larger buckets are up to one ton lighter than conventional buckets.

Perforated or non-perforated models are available. A feature of the all-welded bucket is a new alloy-steel chain with 100,000 psi high tensile strength.—M. P. Mc-Caffrey, Inc., 2121 E. 25th St., Los Angeles 58, Calif.



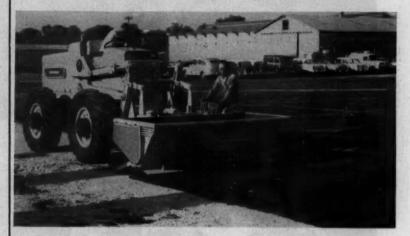
### **Drill, Tank Eliminate Dust**

The new LeRoi sinker drill and dust collector tank eliminate dusty drilling conditions. The continued on page 214

## PAYLOADER° versatility



### ...with Blacktop Spreader



Another exclusive attachment that multiplies the usefulness and workability of "PAYLOADER" tractor-shovels is the Ram Spreader. Substitute it quickly (on the job) for the bucket and you have an economical paver that lays down 8-ft. wide strips of hot or cold mix asphalt in a single pass.

Use it to place new pavement, to resurface or patch streets, driveways, alleys, sidewalks, playgrounds and parking lots. It can reach work in close quarters where large pavers and trucks can't operate. Rubber tires permit travel over sidewalks and curbs without damage.

The spreader features a 2-cu. yd capacity hopper with independent pneumatic-tire wheel-suspension and a separate air-cooled gas engine for hydraulic drive and control. Convenient control levers adjust feeding widths and thickness; sliding gates are removed for 8-ft. width or adjust for widths up to 48-in. Thickness of spread adjusts from 0 to 6-in.

A nearby Hough Distributor has complete details—contact him or write!

HOUGH.

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THE FRANK G. HOUGH CO.	Title		
706 Sunnyside Ave., Libertyville, III.	Company		
Send Blacktop Spreader data to:	Address		
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4-3-2	State		

PROGRESSIVE ENGINEERING MAKES THE DIFFERENCE

Page 212—CONSTRUCTION METHODS and Equipment—April 1959

# REGULATORS NOW AVAILABLE FOR ALL POPULAR AMERICAN CARS

Better electrical performance and greater dependability in any weather are important user benefits found in Delco-Remy's waterproof standard generator regulators, now available for general replacement use.

And here are the features that make them the *right* regulators for all popular American cars and trucks.

- New overhanging one-piece formed steel cover and mating base shed road splash . . . convenient attaching screws are *outside* the enclosed area. Molded soft rubber gasket seals out harmful oil and water vapors.
- Integral sleeves of molded nylon insulator form permanent seal around rivets—assure watertight base.
- New, longer, more flexible armature contact spring on voltage regulator unit assures more positive closing of contact points for smoother operation.
- Welded electrical connections and highest quality tungsten and non-tarnishing precious metal contact points assure minimum resistance, maximum durability.
- Special fine thread screw-type controls allow easy, highly accurate adjustment of all three units.

Always replace with Delco-Remy waterproof regulators. Built to highest quality standards by the world's largest original equipment manufacturer, these improved regulators are available from your car or truck dealer or the United Motors System.

BLCO-REMY . DIVISION OF GENERAL MOTORS . ANDERSON, INDIANA



GENERAL MOTORS LEADS THE WAY-STARTING WITH

Delco Remy



THE PERFECT SOLUTION for concrete compaction in restricted areas is a Viberette Vibrator with small diameter flexible drive and head with replaceable rubber or steel tip.

The 12,000 rpm speed and low amplitude of Viberette produces extremely effective vibration in consolidating low slump concrete—in narrow construction forms, narrow stems of prestress T-sections and other hard-to-reach places.

Easy portability and one-man operation keep labor costs to a minimum.

> WRITE TODAY for full information!

### Advantages

Powerful, 4-cycle, air-cooled, 3 HP gasoline engine. Modern no-slip timing belt drive. Interchangeable heads—1", 1%4" and 1%" diameter.

Replaceable rubber or steel tips on 1%6" and 1%" heads.

Flexible drive lengths - 10' to 20'.

Quick release drive connection.

Viber Company, 726 South Flower Street
Burbank 10
California



Pioneers and leaders in the manufacture of vibrators.

EQUIPMENT NEWS...
continued from page 211

LHV 45 drill draws cuttings through hollow drill steel into the drill chuck and immediately out the side of the chuck housing. Cuttings do not come in contact with working parts of the drill. The drill itself weighs 56 lb, has a 41/2-in. chuck shaped as a 1-in. hexagon, and is 251/2 in. long. The LX-1 dust collector tank features a tank door that can be operated remotely from the drill throttle allowing drilling of numerous holes without taking time out to empty the tank. Dimensions of the 45-lb tank are 13%x7x16 in Venturi air consumption is 18 cfm. Drill and tank operate at 80 to 90 psi. Also available are modified versions of the dustless drill with attachments for use with the LeRoi 125 Tractair.-Le. Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.



### Improves Traction, Braking

Dayton Rubber Company's new V-belt drive for tandem dual axles reportedly transmits up to 85% of the power to a non-powered axle. The V-belt is designed especially for tandem duals used in hauling extra heavy loads.

Dayton claims it improves traction and braking, increases tire life two to three times, and reduces side slippage. The belt works on sheaves mounted between the dual wheels and is usable on vehicles that have the powered axle in either leading or pushing position. Belt weight is approximately 200 lb.

The easy-to-install V-belt requires little or no maintenance.

continued on page 217

Page 214—CONSTRUCTION METHODS and Equipment—April 1959

Oneida l Contract Summer

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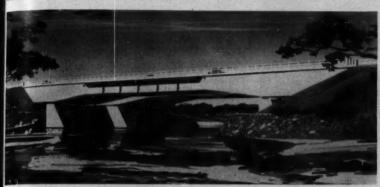
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217

BETTER CONSTRUCTION THROUGH BETTER USE OF CEMENTS

#### news and notes from the field



Oneida Lake Bridge, Brewerton, N. Y., with a span of 320', total length of 460'. General Contractor: Terry Contracting, Inc., Long Island City, N. Y. Consulting Engineers: Summers, Munninger and Molke, Albany, N. Y.

#### 4000 p.s.i. Concrete before post-tensioning Longest Prestressed Span in United States

Now under construction, the Oneida Lake Bridge will carry the Empire Stateway Interstate Route 505 across the longest prestressed concrete bridge span in the United States. Alpha Portland Cement (Type II) has been selected exclusively for this structure.

Present plans call for 4000 p.s.i. concrete strength before post-tensioning.

Two separate structures. The Oneida Bridge is actually two separate parallel structures, one for northbound and one for southbound traffic. Cantilever end girders will support drop-in center girders, with cantilevers counterweighted at the abutments.

Three job-site casting beds. Two casting beds will be used for the I-shaped cantilever girders which will be 14' high and 147' long, weighing 250 tons each. There will be 12 on each side. They will be cast on the site, rolled forward and positioned. The T-shaped center or suspended beams will be cast in the third casting bed. They will be floated to the center and lifted into position. These will be 231' in length and

will weigh about 222 tons each. They will overlap the cantilevers by 25' on each end (per sketch). There will be a total of 10 of these suspended beams.

#### Alpha Field Engineer on the job from the start

An Alpha Field Engineer was on the Oneida Bridge job at the very beginning assisting with various preliminary tests.

On this job, the contractor and consulting engineers are responsible for the mix design which was worked out with the assistance of an Alpha Field Engineer. The tentative mix for the prestressed members is shown below. For 4000 p.s.i. strength at an early age, a 7½ bag cement factor is proposed.

Alpha customers have learned to expect not only finest quality cements, but on-the-job engineering assistance to insure best procedure, best results. Ask your Alpha sales representative about the wide variety of helpful services available to users of Alpha cements, or write to Alpha Portland Cement Company, Easton, Pa.



LONGITUDINAL SEC.

Note:	This	mix
was d	esigne	d for
this pa	rticula	ir job
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intend	ed for	use
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Proposed Concrete Mi	x-1 Cu. Yd.
Cement (Alpha Type II)	7½ bgs.
Sand (Surface dry)	1,280 lbs.
Crushed Stone (#4 to ¾")	900 lbs.
Crushed Stone (3/4" to 1")	900 lbs.
Total Water	36 gals.
Slump	3"

# MLPHA

PORTLAND CEMENT COMPANY

Alpha Building, Easton, Pa.



Geared by FULLER . . .

# Rhodes & Jamieson keeps construction materials on the go

Rhodes & Jamieson, Oakland, California, produces about 5,600 cubic yards of wet mix construction material every day. To keep this "perishable" material moving on schedule, the company runs each bottom dump truck in its large fleet on two 9-hour shifts, and gives each a preventive maintenance check every week.

Tough schedules and tougher hauling conditions call for the best in equipment. That's why Rhodes & Jamieson officials are so pleased with the performance and reliability of the Fuller Transmissions in their big fleet. Typical of the equipment used by the company are the following trucks:

80 International RF-192 ready-mix trucks with 5 and 7-yard mixers, equipped with Fuller 5-C-65, 5-speed Transmissions.

22 International D-405 double bottom hopper dump trucks, with Fuller R-96 10-speed ROADRANGER® singlestick Transmissions.

3 International RD-450 6x6 C.O.E.

units with 7-yard mixers, equipped with Fuller R-46 semi-automatic ROADRANGER Transmissions, featuring 8 closely-spaced forward speeds, shifted by a single lever.

For dependability, ease of operation and economy, Rhodes & Jamieson specifies Fuller Transmissions. There is a Fuller for your job. Ask your truck or equipment dealer for more information on the Fuller Transmission best suited to meet your specific operating requirements.

T. fr to

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FULLER

MANUFACTURING COMPANY



Unit Drap Farge Div., Milwaukse 1, Wis. \* Shular Axie Co., Leuiwille, Ky. (Subsidiary) \* Sales & Sarvice, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulus 3, Okia.

Automotive Products Campany, Ltd., Brock House, Laugham Street, Landon W.1, England, European Representative

EQUIPMENT NEWS... continued continued from page 214

Predicted service life is 75,000 to 100,000 mi. In addition, the belt has a de-icer band made of synthetic rubber and cord that, Dayton says, is similar in principle to the de-icers on airplane wings.—

Dayton Rubber Co., Dayton, Ohio.



#### **New Power Units**

The Ford Power unit for the 534cu in. V-8 gasoline engine comes with skid mounting, electrical system, radiator assembly, sheet metal housing, and instrument panel. It is one of the four new Ford power units. Others are built around the Ford 330-cu in., sixcylinder diesel, and the 401 and 477-cu in. V-8 gasoline engines. The power units are available with special attachments-transmissions, torque converters, and SAE housings. Ford already offers power units for its other diesel and gasoline-powered industrial engines, beginning with the 134cu in. model.-Ford Motor Co., P. O. Box 608, Dearborn, Mich-



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#### **New Roller Available**

The second new pneumatic roller from Buffalo-Springfield is a 3-10 ton, nine-wheel model with four driving wheels powered by a six-cylinder gasoline engine. Buffalo-Springfield's earlier model (CM&E, Jan., p. 162) is a 10-30 ton, seven-wheel roller powered by a diesel engine. Called the PSR-9, the new nine-wheel roller's transmission offers three speed ratios up to 15 mph, for-continued on page 221

# the Greatest Name in Buckets All Over the World

Wherever you go, wherever you see excavating or handling of materials...there you will find one or more OWEN Clamshell Buckets on the job. Faith in their performance, confidence in their sturdy construction, and complete assurance in their ability to complete contracts satisfactorily and "on time"... these are the reasons that powerful, rugged OWEN Clamshell Buckets dot construction jobs all over the globe.

You'll get more from an OWEN in every way — Longer Life, Larger Loads, More Economical Operation. From drawing board to finished product, OWEN lives up to its great name in every way. Put the real worker on the end of the boom! — get a Great OWEN Clamshell Bucket without delay.



# OWEN MATERIAL HANDLING BUCKETS

OWEN'S new center line reeving principle, now incorporated in a completely redesigned line of material handling buckets, is one factor that increases cable life of these buckets up to 75%. A full line now available from ¼ cu. yd. up to 10 cubic yards.

#### **OWEN GRAPPLES**

OWEN'S patented independent tine action 4-prong grapple has proven itself invaluable in land clearing operations. Its independent tine action guarantees positive contact and tremendous gripping power on each of the four tines, no matter how irregular the shape of the object may be.

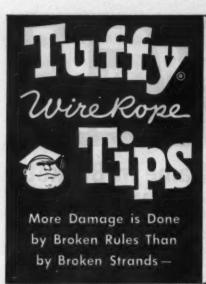
Write us your exact requirements. Remember, OWEN Engineers are at your service. Send for Free Catalog today.



#### The OWEN BUCKET Co.

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BRANCHES: New York • Philadelphia • Chicago Berkeley, Calit. • Fort Lauderdale, Fla.

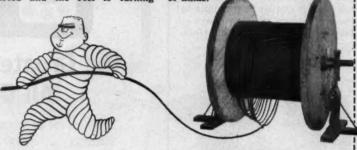


#### Rule 1: RIGHT WAY to Set Up Reel for Unwinding

The stock reel should be set up on jacks, so the rope will come from the under side of the reel.

In the picture below, unwinding has started and the reel is turning

faster than the rope is being pulled off. But no damage is done. Why? Because in coming from the under side of the reel, the rope is simply loosening, without forming loops or kinks.





Tuffy Balanced Dozer Rope

Built to give you longer service

with less downtime. Mounted on

your dozer, a 150' reel of 1/2" or

9/16" can give you a big bonus of extra service. Here's how: when rope shows drum wear or is crushed on the drum, you feed through just enough to replace the damaged part. You

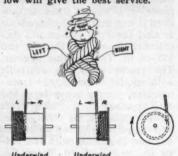
save the 40 to 50 feet ordinarily thrown away. Also available in 300' and 500' reels.

#### Rule 4: What's The Correct Lay for Each Type of Winding?

"Lay" refers to the direction of the strands in wire rope. It's a right lay rope when the strands pass from left to right across the rope. It's left lay when they pass from right to left.

The direction of winding on the drum is determined by standing behind it, looking toward the direction of rope travel.

When winding one layer only on a smooth drum, the right and left lay ropes indicated in the drawings below will give the best service.





Left Lay Rope



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#### Tuffy Balanced Scraper Rope "Balanced" construction makes

it flexible enough to withstand sharp bends, yet stiff enough to resist looping and kinking when slack. Also gives higher resistance to the shock of load impact on slack line. Moves more yardage per foot because it's specially built to take the beating of drum-crushing abuse.



#### Tuffy Balanced Dragline Rope

Here's highest abrasive resistance super flexibility. Better spooling. Smoother riding on grooves. And Tuffy Dragline Rope hugs the drum when casting for full load. Gives you longer service life, consistent dependability, in handling any material - wet or dry dirt, sand, gravel, rock, cement or minerals.



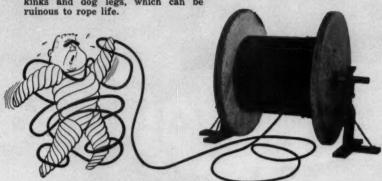
#### Tuffy Balanced Slings & Hoist Lines

"Balanced" because they combine strength, flexibility and toughness in the proper relationship to do a better job longer.

Tuffy Slings and Hoist Lines are a top-performing team in every type of materials handling. The slings are made of a patented, machinebraided fabric that's next to impossible to knot or kink. The hoist lines are a special construc-tion in which strength, flexibility and toughness are balanced.

#### Rule 2: WRONG WAY to Set Up Reel for Unwinding

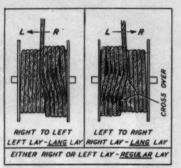
The rope is coming from the top of the reel and forming loops as it over-runs. These loops are likely to form kinks and dog legs, which can be ruinous to rope life.



Rope for multiple layer winding: When a rope winds in the first layer across the face of a drum, it usually forms a uniform helix. On reaching the flange of the drum, the rope rides upon the last turn and starts winding back across the face of the drum, but falls into the depression of the successive turns of rope on the first

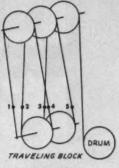
Advancing across the drum on the second layer, the rope, following the depressions of the first layer, actually winds back a turn in each revolution of the drum. It must then cross over two depressions of the first layer to have a net advance of one turn per revolution.

This cross over is unavoidable on the second and succeeding layers. Severe punishment of the rope results, due



to abrasion of the adjacent turns against each other, and the crushing from the next layer above at these points. Parallel-grooved controlled cross-over drums minimize this condition.

#### Rule 3: How to Figure Reeving Loads





Reeving ropes through the sheaves multiplies

the number of parts supporting the load. The lead line to the drum carries the weight of the load lifted, divided by the number of parts, plus the accumula-tion of friction on all sheaves.

To count the number of parts supporting the load, draw an imaginary line across the parts of the rope supporting the load.

The efficiency of reeving sys-tems ranging from one to eight parts is shown in charts which Union Wire Rope engineers make available to users.

#### Rule 5: Use the Tuffy Special Purpose Wire Rope "Tailored" to a Specific Application

There was a time when just any size and lay of rope was cut from a stock reel and used for just about any kind of service. It's different today. The various constructions of Tuffy Ropes are precisely fitted to each type of use.

There are thousands of different wire rope constructions. Union Wire Rope makes them all. But there's only one Tuffy line of ropes. Each Tuffy is the right rope and the best rope for the particular work for which it was developed. Each is "job prescribed". Each has the right balance of strength, flexibility and toughness to give you longest service, greatest efficiency and safety.

Union Wire Rope Corporation, Subsidiary of Armco Steel Corporation. Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand. 2270 Manchester Avenue, Kansas City 26, Mo.

Your Tuffy Distributor Can Help You Get Longest Service Life and Cut Rope Costs







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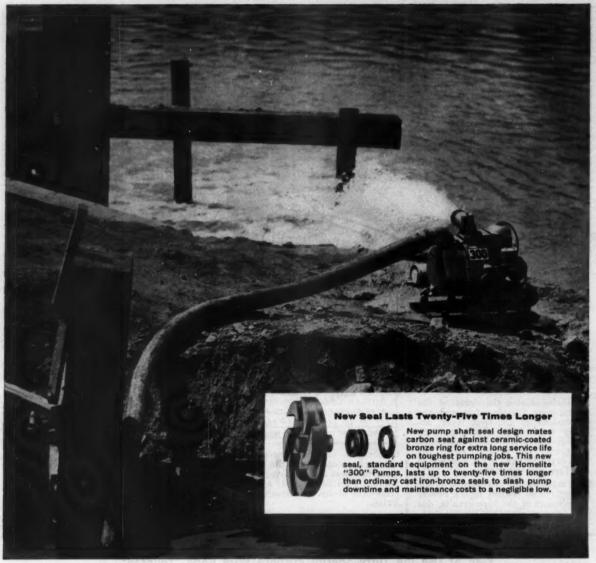
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Subsidiary of ARMCO STEEL CORPORATION

OTHER SUBSIDIARIES AND DIVISIONS: Armco Division . Sheffield Division . The National Supply Company Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Southwest Steel Products

New steels are born at Armco



USED BY MEN WHO BUY EQUIPMENT FOR WHAT IT SAVES

#### Get Better Pumping Longer with the **NEW HOMELITE "300" PUMPS**

Here's the newest and best invest-ment in lightweight, rugged and practical pumping equipment. You get 18,000 gallons per hour capacity. That's 300 gallons per minute. You pump water from ditches, trenches, and other excavations in minutes, Your men get to work faster, And they can stay on the job. Variable throttle control on the new Homelite "300" Pumps keeps excavations workable. Gives you economical seepage control. And their self-cleaning design

Light in weight, only 103 pounds, these "300" Pumps are easy to truck and can be carried by one man. They're fast

to get to the job . . . fast to do the job . . . in any location. All are guaranteed to self prime at 28 ft. above water level. They're air-cooled, weatherproof . . . can't freeze or overheat.

can't freeze or overheat.

Three models are available. The quiet, slow-speed model for economical, high-capacity pumping jobs. The standard-speed model for general use on jobs requiring higher discharge pressures. And the high-volume pressure pump model for ietting suppring through long model for jetting, pumping through long discharge hose or piping and other jobs requiring high discharge pressures. See them in action. Ask for a free on-

your-job demonstration.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.



PUMPS GENERATORS . BLOWERS

HOMELITE . A DIVISION OF TEXTRON INC.,1004 RIVERDALE AVE., PORT CHESTER, N. Y. In Canada - Terry Machinery Co., Ltd.

EQUIPMENT NEWS ...
continued from page 217

ward and reverse. Rolling width is 68 in., and tires overlap 1 in. Maximum engine power is 73 hp. Minimum weight of the PSR-9 is approximately 6,500 lb. for a weight of 720 lb per wheel. Maximum ballasted weight is about 20,500 lb, or 2,270 lb per wheel. Operator's seat is adjustable, can swivel 360 deg and lock at 45 deg increments. Tires are 7.50 x 15, six-ply, smooth tread. Optional equipment includes 10-ply tires, a sprinkler system with cocoa mats, and lights. - Buffalo-Springfield Roller Co., Springfield, Ohio.



#### Blade Fits New Rig

Changes in Caterpillar's No. 977A Angling Bulldozer now make it possible to attach the blade to both the 977 Series D and Series E Traxcavators. In the past, only the Series D Traxcavator could take the dozer blade.

The C-frame is now 21/4-in. wider, and trunnion groups fit the blade to either machine.—Caterpillar Tractor Co., Peoria, Ill.



#### Shoulder Spreader

The spreading blade on ULMac's new U-500 shoulder spreader is curved and sectional, making it possible to roll material out at various widths up to a maximum of 12 ft. The rolling action minimizes segregation and side draft. The spreader attaches to Cat No. 12 or 112 motor graders with a new detachable hitch.

The U-500's 9-ft hopper accommodates the largest dump trucks,



# with a Boardman Central-Mix STABILIZATION PLANT

Highway and airstrip stabilized bases take shape twice-as-fast when you have twice-thecapacity . . . with the industry's first 1000-tph Central-Mix Stabilization Plant, by Boardman.

This plant was built by Boardman with the contractor in mind . . . to cut his production costs and increase his profits. It outproduces all others, yet remains in a competitively-priced field. Exclusive Boardman features like the double discharge hoppers add more speed in loading, increase your efficiency.

Whether it's a stabilized aggregate or soilcement base, you'll find dollars saved in its preparation when you place Boardman's 1000tph plant, or its 500-tph counterpart, in your construction picture.

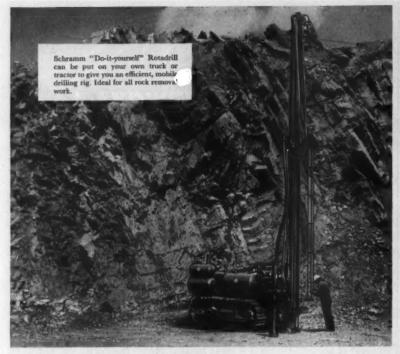
Your letter or phone call will bring the name of the distributor nearest you, along with an illustrated brochure from Boardman . . . fabricators and engineers of construction machinery for more than 40 years. Write today!

the industry's FIRST 1000-tph Plant

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States.



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HERE'S A SURE-FIRE WAY TO ...

# Be competitive on every rock

removal job

Your competition can't match your cost, speed and efficiency when you use the Schramm Rotadrill for rock removal jobs. It's the fastest, most modern drilling rig available. It's self-propelled, self-powered—and furnishes its own air for chip removal, de-watering and blockage breaking. And if you're looking for real operating economies, consider the new Schramm "Do-it-yourself" Rotadrill that mounts on your own truck or tractor. It makes your used vehicle a valuable new piece of equipment for a small capital investment. Can you think of a better way to get the jump on competition?

#### Schramm "Do - it - yourself" Rotadrill gives you additional advantages of . . .

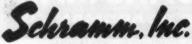
Flexibility Can be furnished to do your own mounting . . . put on your vehicle by your Schramm Dealer . . . or installed at Factory.

Loss Munpower One man can move machine, drill, change steels without assistance. Sets up, ready to go in minutes—takes fewer man hours.

Plus ... 4½" holes for more economical blast patterns ... full hydraulic controls ... choice of one 250 cfm compressor or two 125 cfm units—gasoline or diesel.

Make your first step to outrun competition, now. Get full information from your Schramm Dealer on the complete line of Rotadrills for drilling 4½" to 12" holes, or write for your copy of Bulletin TDR-56.

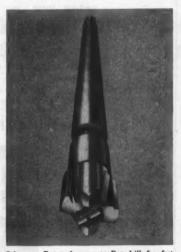
See the Yellow Pages for local Sales, Service and Rental of Schramm Rotadrills—Truck, Pneumatractor, "Do-it-yourself."



MANUFACTURERS OF AIR COMPRESSORS



Rotadrill on truck makes compact, self-propelled unit. Mast has 22 foot travel.



Schramm Rotatool converts Rotadrill for fast bottom-hole percussion drilling in hard rock. Conversion from rotary drilling to Rotatool is as quick and easy as changing steels.

says the maker. Powering the rig's 36-in.-wide conveyor is a 50-hp Wisconsin air-cooled engine. Strike-off edge of the spreader's tri-sectioned steel blade is replaceable.

Depth of spread can be manually adjusted from 6 in. above to 18-in. below pavement level. The manufacturer says the screw-type depth control eliminates blade creeping. The rig's four wheels have solid rubber tires and are adjustable, permitting the level of the conveyor to be matched to the height of the dump truck gate. An operator works from a walkon platform where he can operate the spreader and guide hauling units. — ULMac Equipment Co., Inc., El Paso, Ill.

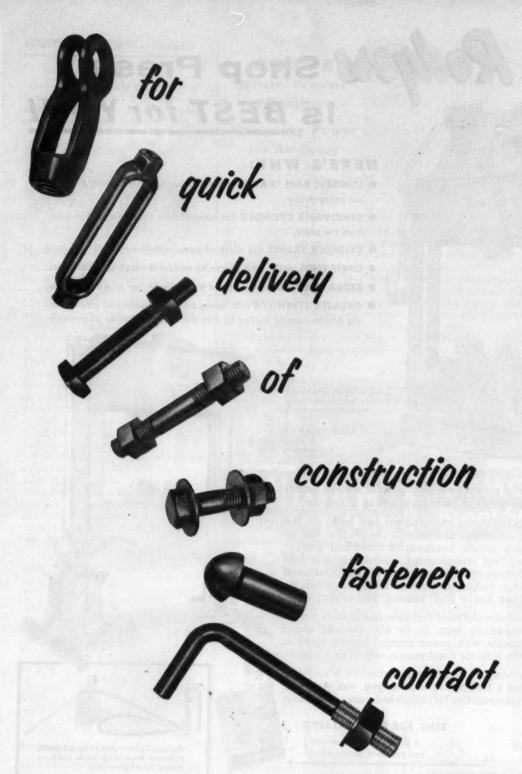


#### **Booms Fold Faster**

Faster folding, unfolding, and transportation from job to job of Koehring booms is possible with the development of Koehring's new pin-pad boom connection. The time-saving pin-pad boom connections now are standard equipment on Koehring's 15, 20, and 45-ton crawlers and on 25, 30, and 35-ton truck cranes.

Lugs on the boom allow folding at any joint for transportation. The job determines whether the sections are pinned or bolted together. In either case, the machined pads carry the heavy loadings.

In manufacture, every pad is machined in a rigid fixture. Then four pin-pad connectors are positioned in a massive jib and welded to the boom section. Since each boom section is handled in the same way, there is perfect alignment of the four drilled and





BETHLEHEM STEEL

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export distributor: Bethlehem Steel Export Corporation.

April 1959 - CONSTRUCTION METHODS and Equipment - Page 223

# is BEST for YOU!

#### HERE'S WHY:

- LONGEST RAM TRAVEL with maximum hydraulic power throughout entire stroke.
- REMOVABLE CYLINDER for independent hydraulic power away from the press.
- CYLINDER TRAVEL full width of press, either way.
- OPEN ENDS allow long pieces to extend through sides of press.
- EXTRA WIDE inside work space to handle bigger jobs more easily.
- GREATER STRENGTH with heavy bar stock sides and pins—bearing blocks support bolster to give uniform distribution of pressure.



When you invest in a shop press it is more important to compare performance than initial cost!

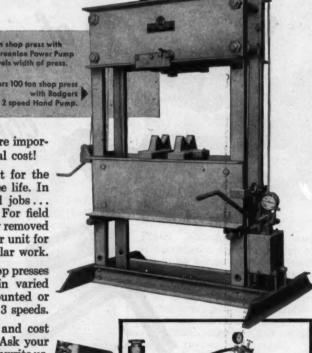
Rodgers Shop Presses are designed and built for the most versatile service, and longest trouble free life. In the shop they handle hundreds of diversified jobs... pressing, bending, straightening, assembling. For field work the Rodgers cylinder and pump are easily removed from the press, making an ideal portable power unit for jacking, lifting, heavy shaft removal and similar work.

Rodgers produces the most complete line of shop presses available—capacities from 60 to 400 tons—in varied standard models with power pumps, top mounted or placed at the side—or hand pumps with 2 or 3 speeds.

When you compare shop press performance and cost you will find a Rodgers is best for you, too. Ask your Rodgers Representative for complete details—or write us.

SEND FOR NEW CATALOG

It gives useful information and complete specifications.



Rodgers Cylinder and Pump are easily

removed from shop press (such as above) for off-press jobs.



RODGERS HYDRAULIC, Inc.

Pioneers in High Pressure Hydraulics Since 1932

7403 WALKER STREET . MINNEAPOLIS 26, MINNESOTA

reamed male-female pin connections and the eight bolt holes .-Koehring Division, 3026 W. Concordia Ave., Milwaukee 16, Wis.



#### **Hydraulic Power Graders**

Leading the parade of 1959 Austin-Western equipment are two new 20,000-lb power graders with full hydraulic control, front-andrear power steering, and 106-hp GMC diesel engines.

The Super-200 grader has sixwheel-drive and six-wheel-steer. The other model, called the Pacer-200, is a four-wheel-steer. four-wheel-drive version. Power trains in both models permit a choice of dry clutch or torque converter, and four-speed or sixspeed transmissions. A power tilt moldboard is optional.

The manufacturer has also announced that its line will be expanded later this year, when three heavier and more powerful graders, three hydraulic cranes, and two new compactors are introduced .- Austin-Western, Aurora, Ill.



#### **Removes Trees**

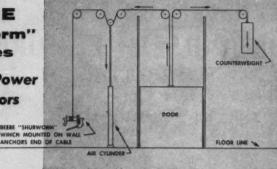
An attachment for crawler tractors knocks over and clears away small and medium-sized trees without preliminary digging or blasting. A telescoping boom and two replaceable cutting blades do the job.

The boom telescopes from 6 ft to 81/2 ft. Boom leverage is combined with the cutting action of

#### BEEBE

"Shur Worm" Winches

**Emergency Power** For Air Doors



A contractor had to design 14 large, vertical-opening, metal doors. Normally these doors would be operated by compressed air, but they had to be provided with a standby power source in case the air system failed.

The answer: Beebe "Shur Worm" Safety Winches. These worm gear winches automatically lock and hold a load in any position. Because of this automatic locking feature, the winches act as anchors for the lifting cables when the doors are being operated by air. In an emergency, the winches will open the doors.

Remember Beebe "Shur Worm" Safety Winches - safe, low cost, foolproof, automatic locking; capacities: 200 lbs., 500 lbs., 750 lbs., 1250 lbs., and 1850 lbs.



#### BEEBE BROS.

2730 SIXTH AVENUE SOUTH . SEATTLE, WASHINGTON

# DRINKING WATER &

SUPPLY TANK NO. 75G



Replaces unsanitary bucket Push button fauest, Takes workers right on the job. 5 gi to fit the back. Sturdy construction. Highly popular.

SMITH GARDEN KING Low-priced power

Sprayer 12 gallon capacity For spraying silicon



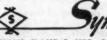
D. B. SMITH & COMPANY poice for Quality the W

## SYMONS Steel Stake

#### Can Be Reused Indefinitely

Drives easily into hard earth. Can be used for practically any type of stake work. This popular item is available in 12", 18", 24", 30", 36" and 42" sizes.

Pullout hole Easily secured to lumber—can be nailed every 1" 0.C. 'I" beam design drives easier, holds best Hi-Carbon Alloy Steel tough to bend lugged point with minimum deflection



SYMONS CLAMP & MFG. CO. 4255 Diversey Ave., Chicago 30, III., Dept. D-9

We will send contractors a sample 12", 18" at 24" stake if request is received on company letterhead. Please include 50c for 12", 75c for 18", 31.00 for 24" to cover cost of pastage and mailing.

Firm Address. City\_ Zone State



And it is positive performance made possible by the Patented Hydraulic gooseneck jack and obtainable only on the

Hydraulically Operated

DETACHABLE GOOSENECK

PULL THE LEVER. The gooseneck lowers for detachment or to travel with lowered deck to gain greater overhead clearance of high loads.

PUSH THE LEVER. The deck raises above normal position to obtain these advantages:

- (1) To gain clearance to pass over embankments.
- (2) Put blocking under overhanging loads—then lower the frame, detach the gooseneck and pull away.
- (3) To use blocking for a fulcrum and raise the rear of trailer for easy servicing of tires.

Operators tell us this is the fastest and most reliable detachable gooseneck trailer in the field.

Get the literature and the complete story.

ROGERS BROTHERS CORPORATION

ALBION, PENNA.

Export Office / SO CHURCH ST., NEW YORK 7, N. Y., U. S. A.

Cable Address: Brasites

#### EQUIPMENT NEWS ... continued

the plow's horizontal and verticle blades to remove trees with minimum displacement of soil, the manufacturer claims. A single pass usually is enough to remove small and medium-sized trees. When the tree is down, the heavy horizontal blade hooks under the fallen trunk, then lifts and dozes is out of the way.

Different models of the Shunk-Winget Tree Plow are available for quick box-clamp attachment to the C-frame of Caterpillar D7, D8 and D9, Allis-Chalmers HD-16 and HD-21, and International TD-20 and TD-24 tractors. Dozer pusharm models fit the Case 800 and 1000 tilt-crown or angling dozers. - Shunk Manufacturing Co., Bucyrus, Ohio.



#### **New Road Widener**

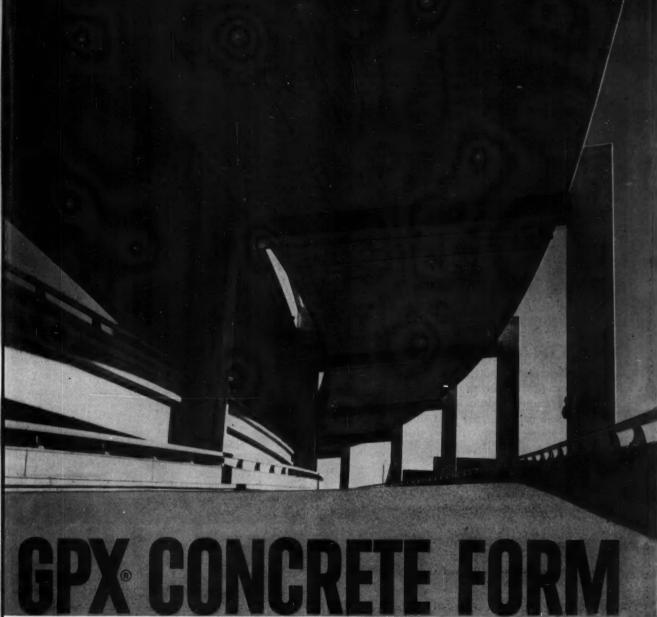
Barber-Greene's latest road widener combines a long wheel base with a special application of hydraulic power steering to overcome the "side drag" problem that makes steering of wideners difficult.

The new rig, called the SJ-50, handles all types of road widening mixes-soil, concrete, asphalt, stone, stabilized material, etc. And the manufacturer offers a full line of spreading attachments to meet the requirements of the various mixes.

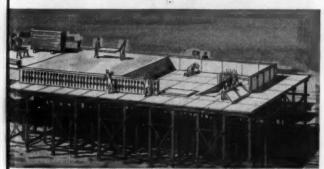
Working with base material, the SJ-50 spreads in widths from 1 to 10 ft. For concrete widening, a special slip form complete with electric vibrator and oscillating screed spreads in widths from 1 to 5 ft. No separate forms are needed when this slip form attachment is used. The asphalt widening attachment has automatic leveling, thickness control and tamper compaction. It spreads in widths from 3 to 6 ft. When the rig is handling base material, the widths may be varied hydraulically.

The new widener is a combina-

continued on page 234



Plastic-faced for smoother finish, faster stripping, longer life!



FOR A BETTER JOB, SPECIFY GPX CONCRETE FORM.

Whether it's a skyway, or a skyscraper, this high-density plastic-faced plywood is the ideal concrete form.

Smoother surface. You get a handsome concrete face, unmarred by grain, checks or patches. In buildings, ceiling slabs can be quickly prepared for painting.

Faster stripping. Smooth waterproof panels won't cling to concrete, are immediately available for re-use.

Longer form life. Form life is limited only by the number of cuts, and handling care. Available in all standard sizes and can be custom-sized. Write today for sample, specifications, and local source. Address Georgia-Pacific, Dept. CME-459, Equitable Bldg., Portland, Oregon.



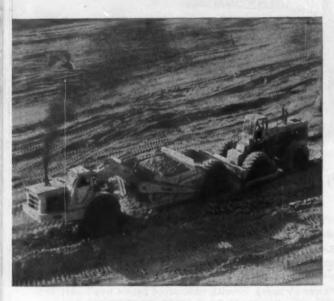
GEORGIA - PACIFIC

## From coast to coast, owners report



#### COLORADO

C. S. Jones, landscaping the new 17,800 acre Air Force Academy, reports his two Model 110 Michigan Scrapers have upped output 20% over other self-propelled pans in same price class. Main reasons: Michigan's greater capacity (10½ vs 9 to 9½ yds), easier loading (9 pay yds in 20 to 45 seconds).



#### **CALIFORNIA**

U. S. Borax & Chemical Corp, digging out largest known deposit of sodium borate in world, gets BIG production from team of 29 yd Model 310 Michigan Scraper and 600 hp Model 480 Michigan Dozer. Payloads weigh out at 26 yds—3 yds more than biggest track-type pushers could load previously.



#### WASHINGTON

Henry M. Johnson Excavating Co, Lewiston, Idaho, leveling for Washington State College's new science building, chose Michigan for "dependability." Scraper has all-Clark matched, designed and built power train . . . the same power train design used and proved in 10,000 Michigan Tractor Shovels.



#### **TEXAS**

T. R. Vardeman & Son Construction Co, digging lake for City of San Augustine, posts good production average with their Model 210 Michigan Scraper. On 2,400 ft cycles, 19-yd rig moves 15 loads per hour.



#### INDIANA

Leon Meshberger, working small scattered jobs throughout the Indianapolis-Columbus area, roads his Model 210 Michigan Scraper everywhere. Self-powered moves save loading, unloading delays and costs. Machine's top speed is over 30 mph.

# "more work done" with Michigan Scrapers



#### KENTUCKY

Holloway & Sons Construction Co, building quarry-to-river dock access road, loads Model 110 Michigan Scrapers with small (85 hp) pusher, yet gets 8¼ pay yds, scale-weighed, per trip. For added versatility, the 10½ yd pans interchange with 13 ton Rear Dumps. Scraper is also available in 4-wheel towed model.



#### **FLORIDA**

S. M. Wall Co, building a 10 mile, 120,000 yd cutoff around city of Archer, teamed two Model 210 Michigan Scrapers with a Model 280 Michigan Dozer: got 14 pay yd, 40 sec loading. Scrapers and pusher provided the efficiencies of *identical power trains:* matched speeds, easier maintenance, lower parts stocks.



#### **NEW JERSEY**

Sallcon Inc, forced by high labor costs to lay off men after each small job, then rehire for new contracts, solved critical training problem with Michigan Scrapers. Power-steered, power-shifted, torque converter Model 110's are "so easy to run," says owner, "new men become proficient after only a few cycles."



#### CONNECTICUT

Brancifort Bros, grading new shopping plaza, moved 1,400 yds per 9 hour day with their two Model 110 Michigan Scrapers. Note high apron lift; and good view operator has of well-controlled positive-ejection spread. Like all Michigans, unit is fully hydraulic; only cable is short length, yoke to apron.



#### **ONTARIO**

George Schultz Construction Ltd, spreading base course, replaced a 10 yd and six 6-yd dump trucks with two 19-yd Michigans. Main advantage of the Scrapers: they hauled 18-yd payloads, unaided, through mud which continually stopped trucks. Also, they spread so accurately, contractor eliminated grader.



Michigan is the registered trademark of

CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road, Benton Harbor 17, Michigen



Traction and mobility bring major economies to well-known paving firm

# Save \$50,000 investment

This Michigan Tractor Shovel—one of 11 owned by Texas Bitulithic Company, Dallas—has, by itself, saved a \$50,000 investment plus, in most cases, \$4 per operating hour.

It alone has replaced a three-unit fleet common to many paving operations. Namely, a 130-plus hp crawler formerly used to pull a big 10,000 lb, 24-30 ft strikeoff planer—and another 130 hp crawler and matching scraper used to supply and remove gravel ahead of the planer. "Duplication of these three machines, which were moved to another job, would have cost us \$75,000," says L. A. Armstrong, Texas Bitulithic assistant secretary-treasurer. "Their operation would require one more man and \$4 per hour more actual operating costs (not counting depreciation, etc)."

Instead, the \$24,000, 133 hp, 26,500 lb Model 175A Michigan does both towing and gravel supply-removal jobs.

## Torque converter smooths towing operation

On towing operation, Michigan dependability and tractive ability have probably been the most important factors. Machine has four wheel-drive, weighs 26,500 lbs, so has no trouble pulling the big two-lane planer. Its torque converter drive has virtually eliminated wheel spin, so holes in the sub-grade are no longer a worry. Operator has excellent view of leveler blade, and Michigan's power steer gives the instant fingertip control so necessary to towing any planer. And the dependable Michigan has lost no assigned work-time—so Texas Bitulithic's paving

crew has never needed to slow down due to insufficient crowning.

## 25 mph speeds gravel supply task

On gravel handling, mobility is probably the key factor in Michigans' success. For example, every time material piles high ahead of the planer, the Michigan operator simply stops his machine, detaches a drawbar pin, and drops the planer yoke. In a few minutes, excess material has been Michigan-handled; cast aside or truck-loaded. Similarly, when more material is needed, the 25 mph Michigan runs down the sub-grade to a break in the forms, scoops up a 234 yard load, and hurries back. Re-attachment to the big planer takes one man (the Michigan operator) only a few minutes, and planing continues.



When excess gravel piles ahead of planer, Michigan is detached to work as loader. Rig thus eliminates separate machine customarily used in this operation. Job shown: paving of new loop expressway around Fort Worth.

Four to five hours work with Michigan easily readies 1,500 to 2,000 ft of sub-grade...all Texas Bitulithic's paving crew usually pours in a day. Michigan pulls the 20-30 ft leveler along the crown at ½ mph.

Texas Bitulithic's 10 Model 75A Michigans handle all sorts of assignments around company's 25 concurrent contracts. Typical tasks include carrying pipe (right), back-filling (far right), Machines were sold by local Michigan distributor, Berry Brothers Machinery Co.





# -and \$4 per hour

# Ten other Michigans do varied jobs for pipe, dirt, paving crews

Elsewhere, Texas Bitulithic Company continues to make good use of their 10 other Michigans (all 80 hp, 1¼ yd Model 75A's). "We run 25 to 30 jobs at a time," explains Equipment Supt R. H. Arnold, "do \$15,000,000 to \$20,000,000 worth of earthmoving, bridge work, concrete and asphalt paving per year. We put one 75A on each major job . . . shuttle our other Michigans, under their own power, between two to five smaller jobs each. Tasks include hauling concrete from mixers to pour sites. Carrying pipe. Truckloading sand, gravel and dirt. Leveling parking lots. And many, many others."

Another money-saving use for the Model 175A Michigan. With tires replaced by segmented steel wheels . . . compaction. This unit belongs to Ruby Construction Company, Louisville, Kentucky. Its job: compacting clay fill on 0.57 mile section of Louisville's new cross-town expressway. Performance: over 100% standard Proctor in two or three passes. Output: all the clay delivered by 12 twelve-yard dump trucks—a total of 5,000 bank yards per 20-hour day. Sav-



ings: the Michigan, using bucket occasionally to spread truck-dumped fill, eliminates full-time assignment of a dozer. Also, the all-wheel-drive Michigan fills low spots... backfills around pipe and abutments... removes boulders from the fill material.



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CLARK EQUIPMENT COMPANY
Construction Machinery Division
2403 Pipestone Road, Benton Harbor 15, Michigan
In Canada: Canadian Clark, Ltd., St. Thomas, Ontario



600 hp Michigan replaces tandem-pushers on Hugh Steele Inc. highway job

# Earns \$126 extra

"Earning their keep!?! Why, in a year, I could run them into the middle of the Chattahoochee River, and still walk away with a profit!"

Hugh Steele is talking about three rubber-tired Michigan Dozers that are making their mark in big, bold dollar signs all around his 18.1 mile highway contract near Ashburn, Georgia.

Biggest profit producer is in the cut. It's a 600 bp Michigan Model 480! This big rig started out in demonstration against two 190-hp crawlers pushloading in tandem. The results were so one-sided Mr. Steele wouldn't let Atlanta distributor Stith Equipment Co.

take the Michigan off his job.

## Scales, stop watch tell the story: 14 more loads per hour

With scales and stop watches, this production story was recorded:

Material Scraper capacity (each of 12 machines)		Crawlers Sandy clay (3000 lbs/yd) 25 yds heaped
Average load time	30 seconds	44 seconds
Pusher cycle time	60 seconds	84 seconds
Average payload, scale weighed	60,000 lbs	48,600 lbs
Average pay yds	20.0	16.2
Scraper loads per 50-min hr.	50.0	35.7
Scraper output per 50-min hr	1,000.0 yds	578.3 yds

In terms of cold cash, these figures mean simply that the Michigan earns more dollars per hour. A lot more! In 30c dirt, its extra earnings average \$126 per hour over tandem pushers, according to Mr. Steele.

## Faster pushing nets bigger pay loads

Watch a few push-loading cycles and you'll see why. The Model 480 has half again as much power as the two crawler-pushers combined. It backs up faster than crawlers, and being one machine instead of two, naturally positions faster (24 seconds faster, on the



Biggest Michigan of all, this 600 hp Model 480, does more work than two big crawlers combined.





Steele's two 262 hp Model 280 Michigans spread and compact 20,000 yds of fill a day. In "spare" time, units also handle such scattered odd jobs as dressing stockpiles (below), towing disabled vehicles, backfilling around culverts.

# per hour

average, on this job). It pushes faster (at speeds up to 5 mph), which both reduces load time and keeps the dirt more "alive." Result: higher, tighter, bigger loads—and more of them.

#### Other Michigans save time on fill-compaction assignment

Just as the big Model 480 is producing profits in the cut, so too are two other Michigan Dozers saving money for Owner Steele on the fill. These units are both 262 hp Model 280's. They are spreading fill and compacting ... achieving specified 95% Proctor in

two to three high-speed (71/2 mph) passes.

#### Speed scattered odd jobs

And that's not all. Go-anywhere 28 mph mobility allows the Michigans to sneak away from main assignments to tackle emergency jobs. Towing disabled vehicles, for example. Back-filling around culverts. Building up low spots in haul roads.

These are just a few of the odd jobs. But the real advantage of Michigan Dozers, Mr. Steele says, is their ability to outperform crawlers on many production

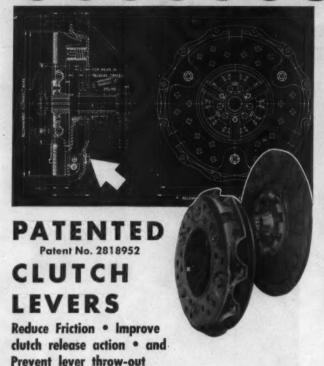
jobs too And do it day after day, with dependability equal to that of Michigan Tractor Shovels. There are four size Dozers to choose from: 162, 262, 375, and 600 hp. Your Michigan Distributor will be glad to show you one in action so you can judge its advantages for yourself.

Michigan is the registered trademark of CLARK EQUIPMENT COMPANY Construction Machinery Division



2403 Pipostone Road Benton Harbor 16, Michigan in Conada: Canadian Clark, Ltd.

# BOOBBORD





Spring Loaded



Heavy Duty



Oil or Dry Multiple Disc



Heavy Duty





at high speeds. SEND FOR THIS HANDY BULLETIN Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER

Patented rolling fulcrum pin action, in the release lever,

results in much less friction and wear, and smoother

release operation in this clutch than in some other types of clutches. Pin automatically returns to original posi-

= 1331 Eighteenth Ave., Rockford, III., U.S.A. =

O O O O O O O O

"Neither Rain Nor Snow Nor Dark of Night ..."

But often, forgetting the postal zone number when you address an envelope can delay your letter long enough to miss the appointed round. There are 106 cities in America where a complete address includes a zone number. Always use it when writing to or from these cities.

#### **EQUIPMENT NEWS...** continued from page 226

tion tractor and trailer, connected by a conventional fifth-wheel arrangement. The tractor carries the operator's deck, power unit, drive wheels, receiving hopper, and discharge conveyor. The trailer, with its own jib hoist, carries the widening attachments when the rig is working. The trailer also serves to transport the tractor unit and the attachments when moving from job to job.

During operation, the tractor is actually a power-steering axle for the tractor-trailer combination. The tractor attaches to the trailer by the fifth-wheel kingpin and also by hydraulic rams. The rams provide a positive steering force and give the operator fingertip control of steering, says the manufacturer. And with the weight of laying attachments carried by the trailer's jib hoist, steering control is possible even under

severe "side drag" conditions. The SJ-50 has 10 forward and 2 reverse operating speeds, a 101/2-mph travel speed, grouped hydraulic controls, and screw adjustments for height and slope control. Conveyor speed can be varied hydraulically. - Barber-Greene Co., Aurora, Ill.



#### Time For Service

Bacharach's new mechanically operated indicator automatically shows when an engine air filter needs servicing. Four sizes are available to meet the needs of all



# Modern **FORD DIESELS** are designed to give you the dependability you need...the economy you're looking for!

If your job demands dependable, economical power day after day, consider a Ford 220- or 330-Diesel installation.

Simple in design and modern throughout, both Diesels offer heavy-duty 12-volt ignition systems for fast all-weather starting . . . overhead-valve construction for higher engine compression, more power . . . and four-way fuel injectors for efficient combustion, greater operating economy.

Quality-built by the most modern production methods, these Diesels are also low in initial cost. And because prompt Ford service is available almost everywhere, Ford Diesel users can count on a minimum amount of downtime.

For these reasons and more, a Ford Diesel can cut your operating costs . . . handle a greater work load. Therefore, specify Ford Diesels for original installation or for engine replacements. Write for details today.

ENGINE SPECIFICATIONS  Basic Model		220	330	
		Х	Y	
Number of C	ylinders	Four	Six	
Bore and Stro	ke—Inches	3.94 x 4.52	3.90 × 4.52	
Displacement	-Cubic Inches	220	330	
Brake Horsepower	Dynamometer	60 @ 2250	96 @ 2250	
	Continuous	48 @ 2250	77 @ 2250	
Torque Dynamometer		151#' @ 1600	236#' @ 1600	
	Continuous	121#' @ 1600	189#' @ 1600	
Compression	Ratio	16 to 1	16 to 1	



INDUSTRIAL ENGINE DEPARTMENT • FORD Division of FORD MOTOR COMPANY
P. O. Box 598, Dearborn, Michigan

YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!



Lima Austin-Western Model 4248 overhead eccentric roller bearing Jaw Crusher

## LIMA A-W 42x48-in. Jaw Crusher produces more rock for less

Speed up crusher output with giant Lima Austin-Western 42 by 48-in. overhead eccentric roller bearing Jaw Crusher. Quality built to outperform! Oversized shafts and roller bearings for extra strength and durability. Extra-deep jaws of tough manganese steel form smaller, sharper and more efficient crushing angle.

main frame is practically unbreakable. Low alloy, high strength 3-in. steel plate gives frame tremendous strength in proportion to its weight.

flywheels are heavy castings, precision machined to proper balance. Split-type hubs simplify flywheel removal. Flywheels are key-locked into place, can't back off in operation.

pitman and shaft assembly can be easily removed through crusher frame top. Cartridge-type housing holds assembly in place, eliminates possibility of loose bearings.

bearings—Both main and pitman bearings are oversized and self-aligning to permit some shaft deflection, and deviation is minimized by locating the bearings close together. Frame absorbs part of shock load as main bearing center lines are within sides of main frame.

Bearings are protected by a simple-type steel labyrinth seal which resists entrance of dirt and seals in lubricant. Bearings may be easily removed by use of a hydraulic system furnished with this model. capacity—What the Model 4248 can do for you may be seen from the fact that it handles 240-360 tons an hour when set at 5-in. discharge opening; estimate based on 2700 lb. per cu. yd.

Lima Austin-Western also produces a complete line of crushing and screening equipment and portable and stationary plants. Other smaller sizes of roller bearing Jaw Crushers are also available.

Profit from our 73 years' experience manufacturing Jaw Crushers and equipment for pit and quarry. Engineered and built to produce more rock at less cost! See your Lima Austin-Western distributor now or write us for free bulletin.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION . LIMA, OHIO



engine types. The indicator which can be used with either wet or dry filters, comes with lugs for easy mounting at the filter or on the dashboard. It is connected by tubing to the filtering stage of the air cleaner. As dirt gathers, resistance in the air passage increases and a bright red warning signal, "change filter," rises gradually in the indicator's viewing box. After the filter is serviced, the indicator's warning signal returns to its low position. The indicator is 1% in. in dia and 2% in. high.—Bacharach Industrial Instrument Co., 200 N. Braddock Ave., Pittsburgh 8, Penn.

#### **Gages Calcium Chloride**

A new calcium chloride weigh batcher adds a standard solution of calcium chloride to concrete mixers at batch plant. The weigh batcher produces a 3½-yd batch with 2% calcium chloride, or a 7½-yd batch with 1% of the solution.

A remote control box contains all the switches and indicator lights. The batcher can be wired to batch and discharge automatically in combination with other automatic controls.—C. S. Johnson Co., Champaign, Ill.



#### Rugged Paving Breaker

Thor's new No. 125 paving breaker has a longer piston hammer stroke and a wider tappet diameter than the older model. The 125's hammer stroke is 5/16 in. longer than the stroke of the earlier model, called the No. 25. Tappet diameter on the new pav-

# **FREE-FIT Screed Bases**

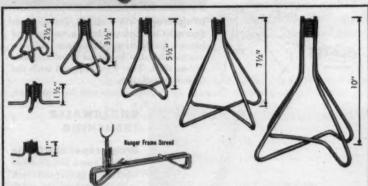
Richmond ½" and ¾" screed bases now available in alternate Free-Fit Type for adjustment without turning cradle head.



- Free-Fit Callar permits free passage of ½" or ¾" cradle head as needed.
- Can be adjusted for height simply by turning the Jam Lagnut.
- · Screed holder is re-usuble.

A recent addition, Richmond's Free-Fit Screed Bases are essentially rugged, dependable supports that are easily adjustable and will maintain the required height. They have been designed to support pipe or T-bars without deflection under heavy loads and are stable enough to withstand severe screeding action.

This type of unit is especially handy for use on structural steel beams of bridge decks where it is desireable to tack-weld the screed base to the steel. Adjustment is readily possible with the free-fit assembly.



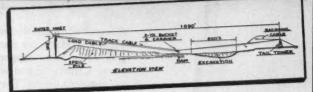
Richmond has a wide range of adjustable screed base sizes. They can be used for hand screeds, vibratory screeds and have been adapted for heavy power screeds. Hanger Frame Screeds are designed to do a two-fold job of hanging forms and supporting screed rails. Spans up to 36 feet have been screeded with these devices. Whatever the type or size, all Richmond screeding devices provide the extra strength that saves money and assures a better job.

There are more than 400 items in Richmond's line of engineered form tying devices, anchorages and accessories. Richmond's 47 years of experience stands behind them. It pays to use them. Send for your Richmond Handbook describing the full line. For your copy, or for help on a specific concreting problem—

Write to: Richmond Screw Anchor Company, Inc. 816-838 Liberty Ave., Brooklyn 8, N.Y. or 315 South Fourth St., St. Joseph, Mo.

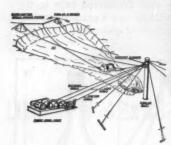


DIGGING and CLEARING



Slackline Cableway-A 2-yd. bucket is used to maintain a clear channel to an irrigation project. The cableway digs the hard packed silt and conveys it to a spoil pile on the downstream side of the dam. Method permits removal of silt without wasting water. - Sauerman News No. 146.

#### RECLAMATION TO HOPPER





DragScraper - A 4-cu. yd. DragScraper digs sand and gravel from a wet pit and hauls it 400 ft. to grizzly hopper. This new machine handles increased plant demands in one shift. Two were required with the former installation.

-Sauerman News No. 144.

#### UNDERWATER TRENCHING



-Here's how a DragScraper used with a carrier and track cable can extend the reach of any crane. This arrangement was highly successful in digging a trench for underwater pipe and backfilling after pipe was laid. -Crane-DragScraper information is available in Field Report No. 228.



Give us details on your operation. Our engineers will give prompt recommendations and work with you to provide the best method for your requirements. Ask for Catalogs A (DragScrapers) and C (Slackline Cableways).



BROS., INC. BELLWOOD, ILL.

Coscent Scrapers - Sluckline and Invilling Embleways - Baroline

ing breaker is 1/8 in. wider.

The manufacturer says the tappet flange on the paving breaker is 17% thicker, and that the 30% longer tappet seat extension gives longer sustained power thrust. A new metering throttle controls the air supply and helps the operator gage air input for smoother starts. Other new features include complete diametral housing of the tappet with the front-head, assuring air cushioning even when the tool is running free; and a replaceable pressed-fit bushing in the front-head that takes heavy wear from the moil point shank and helps cut replacement cost.

Standard chuck size for the No. 125 is 11/4-in. hex x 6 in. An optional chuck 11/8-in. hex x 6 in. is available. Overall length is 281/2 in. Weight is 85 lb. It has 34-in. pipe thread air inlet.-Thor Power Tool Co., 175 N. State St., Aurora, Ill.



#### **Electric Compactor**

Optional equipment for the Maginniss vibratory compactor is a 3-hp 110/220/440-volt electric motor that can replace the usual gasoline engine and clutch. The motor gives 60-cycle, single or three-phase power at 3,450 rpm.

The maker lists quiet operation of the electric motor and ability to walk in either direction as two advantages of the rig. Called the Powr-Pactor, it vibrates at 6,500 vpm, producing a compacting force of 4,000 lb. Travel speed is up to 50 fpm. Compacting plate is 12x18 in. A water-feed attachment and wide steel rollers are available for hot-mix asphalt compaction. - Maginniss Power Tool Co., Mansfield, Ohio.



# Big Advantages of EUCLID'S TC-12

#### Twin-Power Crawler

Functional "years ahead" design, combined with unequalled power, makes the new series TC-12 the best all-around performer in the big tractor field. Its big power and big performance helps beat the pinch on profits...on every kind of big tractor work. Check these cost-cutting features:

Twin Engines with a total of 425 net horsepower... separate Torqmatic Drives each consisting of torque converter and semi-automatic transmission...more workability for heavy dozing, ripping, push-loading and towing than any other "super" tractor.

Independent Track Drives give the big TC-12 almost unbelievable mobility and maneuverability. With its separate power train and Torqmatic Drive, each track can work all the time because its power and speed is individually controlled. Operator has immediate, positive control for quick turns and side slope work.

Rigid Track Alignment is constantly maintained because each track is positioned to its main frame...each half of the tractor oscillates on a big diameter transverse shaft which provides maximum traction in rough going and increases track life. The tractor can be easily split into two halves for transport from one job to another.

Fast, Easy Operation is achieved by the separate Torqmatic Drives and simple controls. There's no master clutch...changes from one speed range to another are made under full power. Excellent visibility front and rear, and comfortable operator's seat, help to increase productive capacity. Good machine balance and stability, and "fast on its feet" performance, make the TC-12 unequalled for any big tractor work.

Service Accessibility that cuts downtime to a minimum is a feature of TC-12 design. Unitized assembly of converter, transmission and drive case components permits fast servicing or replacement without major tear-down of other parts. For example, both drive sprockets can be removed or replaced in about one-third the time required for the same work on a competitive big tractor. Planetary final drives can be serviced without breaking track or pulling sprocket.

Whatever the job, if it's a big tractor application the Euclid TC-12 will bring the best return on investment... the Euclid dealer in your territory can prove it!

**EUCLID** Division of General Motors, Cleveland 17, Ohio



# EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE



T. Edgie Russell, Founder and Senior Partner of T. Edgie Russell Co., until his death in 1959. Was a long-time subscriber to CONSTRUCTION METHODS Magazine.

# How million-dollar contractor plays an important role

... with 96 units of equipment and the manpower that knows how to make them produce!

Contract awards continue upward! Construction machinery sales are expected to top 1958 by 21%. The construction picture across the nation is bright. Contractors are combining more machinery, materials and manpower to set new construction records in the months and years ahead. As the construction industry continues to move ahead, the role of contractors large and small becomes more and more important to the industry and the nation.

The progress being made in highway improvement in Maryland, for example, can be attributed in part to certain of its native sons who received training under the State Roads Commission. Some went on as highway builders with their own organizations, and in this manner play an active role in the improvement and growth of their community and state.

T. Edgie Russell was one of this group. After nine years with the State Roads Commission of Maryland, performing every field engineering capacity, he formed his own contracting group known as Bester, Gosnell, and Russell in 1922. In 1926 he formed the T. Edgie Russell Co. of Frederick, Maryland and in 1941 reorganized as a partnership with his three sons.

One of the keys to the growth and success of contractor T. Edgie Russell Co. is their ability to bid effectively on contracts in heavy construction ranging from grading, drainage, and bridges to flexible type pavements for highways and airports, and the sundry forms of construction entering into county and municipal improvements. The organization has limited its construction activities primarily to the state of Maryland.



Above some of T. Edgie Russell's construction machinery in operation on one of its highway projects. 96 units are employed in the construction of highway, bridge, airport, drainage, etc.

#### \$7 million of construction in five years

The T. Edgie Russell Co. has a permanent staff of forty loyal employees who are rated top men by management. From operators on up to top management, the teamwork of the staff and some 110 workers at the peak season has contributed in large measure to the firm's success. In the five-year period through 1958, this contractor completed over \$7 million of construction . . . an average of \$1 million plus a year. As of early 1959, the firm had over \$3 million of contracts on its books.

#### Owns and operates 96 units of machinery

The Russell contracting firm prides itself on knowing how much equipment it needs to get maximum production on its projects. Top operators of some eighty-seven units of heavy and light equipment help produce better than one million of construction a year. The breakdown of the firm's major equipment is shown below.

- 8 rollers (Buffalo-Springfield, Ferguson)
- 1 compactor (50 ton) (Ferguson)
- 6 graders (Caterpillar)
- 8 tractors (crawler) (Caterpillar, Case)
- 4 Tournapulls (LeTourneau-Westinghouse)
- 4 scrapers (Caterpillar, Allis-Chalmers)
- 3 shovels (Koehring, Lorain)
- 2 truck cranes (Koehring)
- 1 front-end loader (Allis-Chalmers)
- 2 vibrating tampers (International)
- 4 pavers (Blaw-Knox)
- 3 spreaders (Birch)
- 2 jackhammers
- 2 pavement breakers
- 1 windrow loader (Athey)
- 2 power sweepers
- 1 tractor (Mack)
- 1 dump trailer
- 1 low boy trailer (Fruehauf)
- 10 dump trucks (Ford, Chevrolet, Mack)
- 4 pickup trucks (Ford, Chevrolet)
- 1 electric welder
- 1 flat bottom truck—(Chevrolet)
- 2 water tank trucks (Chevrolet)
- 4 pumps (Marlow)
- 3 air compressors
- 1 rooter (LeTourneau-Westinghouse)
- 3 office trailers
- 10 two-way radios -- (General Electric)
- 1 base station (General Electric)

Page 240—CONSTRUCTION METHODS and Equipment—April 1959

# T. Edgie Russell Co. in the construction industry

T. Edgie Russell Co. emphasizes rigid equipment maintenance. It has a shop superintendent and three regular mechanics. Top equipment operators double as mechanics, perform on-the-job maintenance and work at the base shop in the off-season. \$150,000 a year is invested in maintenance for parts and labor.

# \$150,000 a year invested in new equipment

In a contracting firm of the size of T. Edgie Russell, the purchase of equipment represents a very important investment. On the average, \$150,000 is invested in new equipment each year. Consequently, top management enlists the knowledge, opinions and recommendations of its key personnel (from operators on up) in the purchase of new equipment.

# What Robert W. Russell, senior partner and acting head of T. Edgie Russell says about equipment purchases:

"I wouldn't buy a new piece of equipment without first talking to my operators. Before buying equipment we have meetings with our top management, job superintendents, equipment superintendent and our key operators. After considerable discussions, consideration of all opinions and recommendations we decide on the purchase of equipment."

Much of the success of contractor T. Edgie Russell Co. can be attributed to its founder who directed its operations along with his sons until his death in early 1959. The company will continue under the direction of his sons, with Mr. Robert W. Russell acting as senior partner. Mr. Russell has twenty years experience in the construction industry and has been active in the direction, growth and development of the company. Future plans of the organization will parallel the successful ideas of the founder. Like his father, Bob Russell has been a reader of CONSTRUCTION METHODS for many years.



Pocomoke Bypass—Relocation of U.S. Route 13, Md. \$488,000 project, bypasses Pocomoke City, Md. Required removal of 61,000 cu. yds., 351,000 cu. yds. of fill replacing muck.



Robert W. Russell, Senior Partner of T. Edgie Russell, General Contractors. A subscriber to CONSTRUCTION METHODS MAGAZINE for over 20 years.

#### "I have been a reader of CONSTRUCTION METHODS for over 20 years"... says Robert W. Russell

"We have been readers of CONSTRUCTION METHODS AND EQUIPMENT for over twenty years. We find that among the men of the organization CONSTRUCTION METHODS has the widest circulation. We believe there are two reasons. First, the down to earth practical approach interests the people who have to do the work, to a far greater degree than the theoretical, financial and business aspects. Secondly, the evident knowledge on the part of the writer, together with the superb illustrations, enable the reader to thoroughly understand the material presented. I tear out editorial pages of particular interest and file them for future reference. I also read the advertisements thoroughly."

In addition to Mr. Russell, there are three key men in this contracting firm who subscribe to CONSTRUCTION METHODS AND EQUIPMENT. To reach and sell important contractors like T. Edgie Russell who are helping to change the face of America, CONSTRUCTION METHODS deserves a permanent place on your advertising schedule.

# Construction Methods EQUIPMENT

A McGraw-Hill Publication 330 West 42nd St., N. Y. 36, N. Y.

\*ABC Publisher's Statement, Dec. 31, 1958

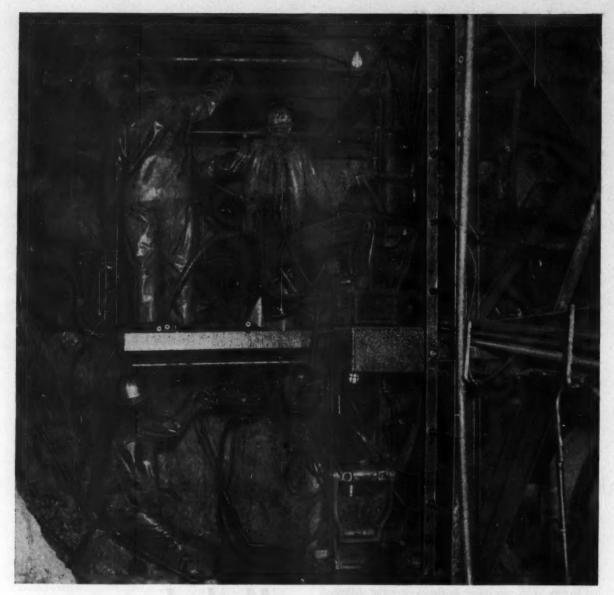
47,395° paid circulation







Frederick Bypass—3 miles in length—\$620,000 project. Relocation Route 40 and U.S. Route 15 from Virginia through Maryland. Required 125,000 cu. yds. of excavation and borrow, 90,000 square yds. of flexible type paving.



# Steel Bites Granite at Fremont Canyon

Using Bethlehem Hollow Drill Steel to bore most of the blast holes, the contractors are making steady progress in removing 225,000 cu yd of rock, most of it granite. The scene: Fremont Canyon Power Plant and Power Conduit Project in Wyoming.

Authorized by the Missouri River Basin-Glendo Dam Unit of the U. S. Bureau of Reclamation, the project is about 40 miles southwest of Casper. Besides driving two 3-mile tunnels the contractor is excavating for the power house. Said W. W. Roberts, superintendent for the Coker-Kiewit-Cunningham combine: "Bethlehem Hollow is providing good service on this job. We like it."

You can count on good service in any type of rock with Bethlehem Hollow. Rolled from a special fatigue-resistant steel, it has a uniformly round hole. Easy to heattreat, it has a wide quenching range.

Bethlehem Hollow comes in Carbon and Ultra-Alloy grades, in all standard sections and lengths. Make sure you have Bethlehem Hollow on your next rock removal job.

BETHLEHEM STEEL COMPANY BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation Export Distributor: Bethlehem Steel Export Carporation

## BETHLEHEM HOLLOW DRILL STEEL



# New Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy, write directly to the manufacturer at the address given.

SUBMERSIBLE PUMP-A submersible, portable electric pump is described in a folder from the Stenberg Mfg. Corp. The pump, the Flygt B-150/200L, has a maximum capacity of 3,000 gpm and will pump to a maximum head of 220 ft. It weighs 1,200 lb so that it can be moved easily by truck and crane. It requires no installation, suction hose, or priming. Other features of this pump are its ability to handle a high proportion of solids without clogging, and to run dry without damagepumping starts again as soon as water flows into the sump. In addition it can run for long periods without supervision.-Stenberg Manufacturing Corp., Hoosick Falls, N. Y.

WATER REPELLENT - An 8-p booklet, called "Concrete Highway Protection," describes a water-soluble silicone water repellent to protect concrete surfaces that has been introduced by the Silicones Division of Union Carbide. Called XR-20 Silicone, it is shipped as a 20% silicone concentrate and is made into a 2% ready-to-use solution by mixing 11 parts water with one gal of XR-20. The solution is applied to the concrete after it has dried .-Silicones Division, Union Carbide Corp., 30 East 42nd St., New York 17, N. Y.

DRAINAGE PIPE-A new 28-p Armco catalog deals with perforated pipe for controlling ground water. Subjects covered are single-treatment control: typical methods of solving subsurface drainage problems; cost; selecting the right pipe; recommended methods of installation; and a check list for sub-drainage systems. Also included are drawings of standard fittings, tables, and photographs of representative installations. Form P.P.-8358 .-**Product Information** Armco Drainage & Metal Products, Inc., Middletown, Ohio.

continued on next page



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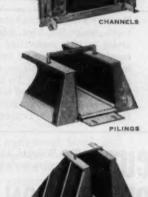
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# RENNER WOW TWO PIECE



Renner's new shank-and-cap tooth design has been job tested under varying excavating assignments and has proved outstanding in wearing qualities as well as in digging ability. To increase your shovel output and eliminate hours of costly downtime, order Renner Two Piece Dipper Teeth from your power shovel dealer or write us for detailed information.

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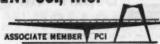
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The Wolcott Avenue Bridge in Connecticut illustrates how a CUT contractor's know-how, together with the use of Freyssinet post-tensioning methods, reduces production time and cost. Merritt-PRODUCTION Chapman & Scott completed the 14 cast-in-place spans, each 120' long, months ahead of schedule. Intercontinental TIME AND Equipment Co. supplied the post-tensioning stressing components. Full details on the Wolcott Avenue job and our COST ON prestressing materials and equipment are available now. Your inquiry is invited. POST-TENSIONED JOB



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NEW PUBLICATIONS ...

continued

SCRAPERS—Operating features of the International 75 Payscraper and the 55 Payscraper are detailed in a 16-p catalog. The 75 has a 20-cu-yd heaped capacity and is powered by a 262-hp turbo-charged diesel engine. The 55 has a heaped capacity of 14 cu yd and has a 175-hp diesel engine. Catalog CR-733-H.—International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

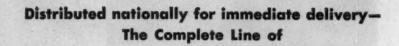
AIR MOTORS—A 16-p booklet, Form 5072A, describes over 100 air motors in the Ingersoll-Rand line. The units cover a power range from 0.3 to 24 hp, with speeds running from 50 to 2580 rpm at rated horsepower. Both Multi-Vane and Piston motors are listed with complete specifications. — Ingersoll-Rand Co., 11 Broadway, New York 4, N. Y.

GEAR PLANT — A new illustrated brochure, Form 26 IG, by the Illinois Gear & Machine Co. describes company products, plant facilities, capacities, types, processes, materials and equipment. The company is one of the world's largest manufacturers of custom gears.—Illinois Gear & Machine Co., 2108 N. Natchez Ave., Chicago 35, Ill.

PUMP DATA — A specification sheet, No. 6525-S8, describes the Worthington Blue Brute 40M engine driven self-priming centrifugal pump, a new item added to the line of contractors' pumps in 1958. — Worthington Corp., Advertising and Marketing Promotion Dept., Harrison, N. J.

HYDRAULIC CRANE — Two folders describe Austin-Western's wheel-mounted hydraulic crane. One folder gives principal dimensions, minimum aisle widths for 90 deg turns, hook speeds, maximum road speeds, tractive efforts, gradeability and towing capacities. The second sheet gives attachments and special equipment for this machine.—Austin-Western, Construction Equipment Division, Aurora, Ill.

CLUTCH DATA — Twin Disc Clutch Company's new Bulletin No. 314 gives condensed specifications on friction and fluid drives. Twin Disc products covered are: friction clutches (mechanical and



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The quality line for original equipment... the preferred line for fast, easy on-the-job replacements! Let Surgepruf be your one dependable source of hose, couplings and components for every industrial and automotive application! High-pressure, medium-high pressure and low-pressure hose for temperature operating range of -40° to +275°F. Couplings are reusable. Complete range of hose sizes and couplings, as well as adapters and swivel adapters. One of Alemite's 34 strategically located distributors is ready to give you prompt, complete service!

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### NEW PUBLICATIONS ...

air-actuated); power take-offs; reduction gears; fluid couplings; torque converters (single-stage and three stage); and marine gears. All information on a particular unit is contained on one page for ease of reference.—Twin Disc Clutch Co., Racine, Wis.

DUMP TRUCK—A 16-p catalog describes Euclid's Model R - 27 Rear- dump hauler for heavy construction, quarry, and industrial operations. Illustrated with cutaway views of all major components and job pictures, Form 130 explains the operating advantages resulting from new design. Complete specifications are included.—Advertising Department, Euclid Division, General Motors Corp., Cleveland 17, Ohio.

TRENCH BACKFILLER-A 6-D folder describes the Cleveland 190 pipeline backfiller. The folder covers Cleveland's new throwout clutch that is cooled by continuous circulation of water from the engine's cooling system. Another improvement in the 190 is the repositioning of the boom hinges above the crawler tracks to keep them free of mud and water. One of the first new models in the field backfilled more than 40,000 ft of trench for 20-in. dia pipe in 131/2 hr.-The Cleveland Trencher Co., 20100 St. Clair Ave., Cleveland 17, Ohio.

CABLEWAY — Eight torque converter equipped Slackline Cableway installations are described in a new brochure, No. TC-1, just released by Sauerman Bros. Haul distances of up to 1,000 ft and digging depths of 90 ft are covered in the individual plant stories. The brochure also gives typical operating costs for the Slackline Cableway and contains a sample layout drawing.—Sauerman Bros., Inc., 612 S. 28th Ave., Bellwood, Ill.

SURE GRIP CATALOG—A new catalog, covering their expanded line has just been issued by the Dayton Sure Grip and Shore Co. A feature of the catalog is the way in which the specifications and data have been condensed and arranged to simplify ordering.—The Dayton Sure Grip and Shore Co., Kercher St., Miamisburg, Ohio.



# ON "WILDERNESS ROAD" PIPELINE

Key equipment in building a 36-mile natural gas pipeline from Osborn Gap, Virginia, to Maytown, Kentucky, were 9 Carco-winch-equipped Allis-Chalmers tractors.

Called Wilderness Road, the line was a tough assignment, as solid rock and grades up to 65 degrees were encountered in crossing the mountains of Virginia and eastern Kentucky.

On this job, as on most pipeline projects, Carco winches were found invaluable in helping complete the work on schedule. Some of the important tasks for which the contractor, H. B. Ranier Construction Company of Prestonburg, Kentucky, depended upon Carco winches were towing costly, heavy equipment such as loaded pipe trucks, ditchers, backhoes and welders up steep grades and holding them on down slopes.

All 9 Carco winches were either Model FO or Model GO. Both are specifically designed for pipeline and oilfield work. Both offer contractors two forward speeds and reverse, automatic brakes, constant mesh gear trains and other features, many exclusive with Carco.

Carco makes more winches for more makes and models of industrial tractors than any other producer. That's conclusive evidence that Carco winches are designed to perform efficiently and built to withstand the rugged service to which they are subjected. For your next winch, be sure to see your nearest Carco dealer. PACIFIC CAR AND FOUNDRY COMPANY, Renton, Washington, Branch at Chicago, Illinois.

SPECIFICATIONS
CARCO FO Winch
Cable Drum Sizes:
Barrel diameter 8"
Flange diameter19"
Barrel length15"
Drum Capacity
(calculated):
5/8" wire rope746'
3/4" wire rope518'
1" wire rope390'
Line Pull, Bare Drum:
To 50,000 lbs. depending
on tractor horsepower.
Chinning weight-1.500 lbs.

SPECIFICATIONS	
CARCO GO Winch	
Coble Drum Sizes: Barrel diameter 8 Flange diameter 22	
Barrel length13	-
Drum Capacity (calculated):	
3/4" wire rope658	-
1/a" wire rope482	
1" wire rope371	
11/8" wire rope293	
Line Pull, Bore Drum: To 60,000 lbs. depending on tractor horsepower.	9
Chinning weight 2 425 lbs	

Carco is a pioneer maker of tractor winches. From the first, Carco winches have been built to give such lasting officioncy they have earned an international reputation for dependability.



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costs. (The Club assumes this charge on prepaid orders.) Forth- coming selections will be described to me in advance and I may decline any book. I need take only 3 selections or alternates in 12	Soil Mechanics, Foundations, and Earth Structures, \$6.60 Composition and Properties of
months of membership.  PLEASE PRINT	Concrete, \$6.60 Reate Location and Survey- ing. \$8.75
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Address	Formulas for Stress and Strain, 38.80
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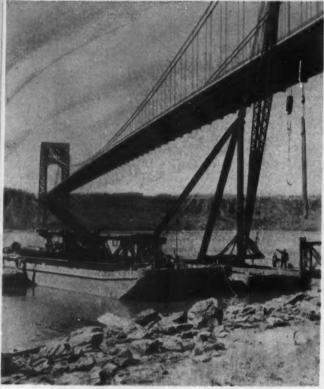
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# Methods Memo . . .



#### From the Ground Up

This is the first work in the 20-month job of adding a lower deck to the George Washington Bridge across the Hudson River between New York City and New Jersey.

A Bethlehem Steel Co. crew is driving piles for a dock to service steel-carrying barges. Steel for construction of the side span on this bank of the river will be unloaded at the dock and assembled on the ground, then lifted into place. The side span across the river will be erected in the same way.

Bethlehem will erect the lower deck for the suspension span from barges anchored in the river. Specially designed overhead trolleys, suspended from the existing roadway, will lift the steel from the barges approximately 200 ft into place.

This method of building the lower deck entirely from ground or water level will avoid interference with the heavy traffic across the bridge. The lower deck will require a total of 13,640 tons of steel. Completion is scheduled for December, 1960.

#### A Boon For Roadbuilders

The Michigan State Highway Department has perfected a nuclear testing device that will be of great importance to roadbuilders.

It utilizes radium beryllium as the source of gamma rays to measure soil density and of neutrons to measure the moisture content of the soil. It's light, portable, and costs less than one-third as much as the heavy testing equipment now available. With this machine, moisture content and density in an embankment can be checked more frequently and with less trouble.

The same device also can be used for a variety of other types of testing. For example, it can measure the asphalt content of a road surface without destructive testing. And it can test the soundness of concrete payements or structures quickly in the field.

You're sure to hear more about this device.

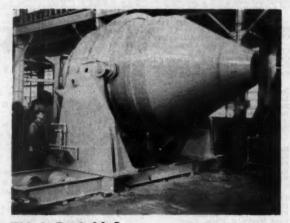
#### \$350-Million Model City

An all-new, model community for 50,000 people, built from scratch on a 6,000-acre site. That's the plan announced by industrialist Henry J. Kaiser and a group of associates.

It will be located in Hawaii, near Honolulu, and will cost an estimated \$350 million. Name of the new community will be Hawaii-Kai. The announcement says first construction will begin "within a matter of months."

Associated with Kaiser in the project are Fritz B. Burns, a founder and past president of the National Association of Home Builders: Welton Becket, Los Angeles architect; and trustees of the Bernice P. Bishop estate.

Construction at Hawaii-Kai will include resort hotels, apartment buildings, private homes in various price brackets, and a marina plus roads, schools, shopping centers, water and sewage facilities—in fact, everything that is required to provide complete community facilities for a medium-size city.



#### This Is Portable?

Here's probably the world's largest tilting mixer. It weighs 53,000 lb. And it will go into a portable batching plant of the Repogle Construction Co. of Circleville, O.

T. L. Smith Co. is the manufacturer of the 10-cuyd model. They also are building three similar mixers for Langenfelder & Sons of Baltimore, Md.

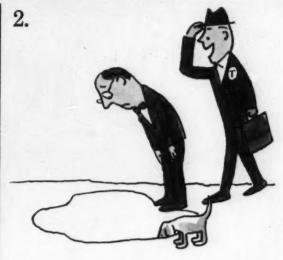
# How Bob's downfall proved a windfall



Bob Taylor won the contract—'twas a much combated prize—
To dig an underground garage of vast, majestic size.

"Let's excavate to China," Taylor cried, "let's see 'em roll!"

"Yes, sir!" replied a foreman, then fell plunk into a hole.



Poor Bob was glum as people come. A Travelers man heard all, "Hereafter," he suggested, "let The Travelers take the fall, For under Workmen's Comp and Public Liability, When workmen or some passer-by gets hurt, we pay the fee.



"But best of all, our safety engineers survey each site,

To find those hidden hazards and to help to set them right.

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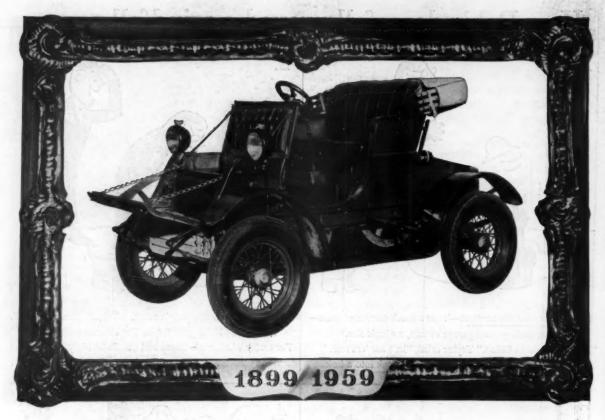
Reduces costs and accidents, saves you from being nervous."



"Exactly what I need," cried Bob, "you don't have to cajole,"
The excavation's going great. Bob won't be in the hole!
If you're about to build a road, a tunnel, bank or hall—
Secure the plan! Just give a trusty Travelers man a call.

NOTE: Bonds, Equipment Floaters—Builders' Risk Insurance, too Are other ways The Travelers helps a contractor like you.

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# Everything's changed but the trademark on the bearings

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you can't get anywhere else. It means better performance with longer life and less maintenance in machine tools, steel mills, heavy construction machinery, farm implements and tractors —wherever wheels and shafts turn.

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